Telephony.

THE AMERICAN TELEPHONE JOURNAL

Comprising Telephony, American Telephone Journal, Telephone Weekly, Telephone Magazine, Telephone Securities, The Telephone and Sound Waves
PUBLISHED WEEKLY BY THE TELEPHONY PUBLISHING COMPANY, MONADNOCK BLOCK, CHICAGO

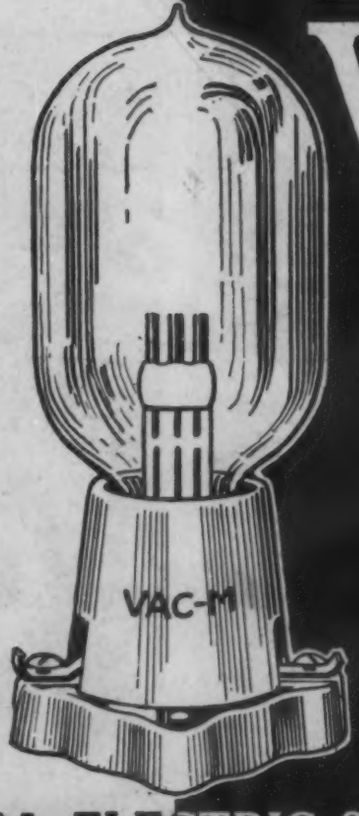
VOL. 64, NO. 17
INDEX TO ADVERTISEMENTS, PAGE 65
BUYERS REFERENCE INDEX PAGE 65

CHICAGO, APRIL 26, 1913

SINGLE COPIES, 10 CENTS
YEARLY U. S. A., $3; CANADA, $4;
ALL OTHER COUNTRIES, $5

If it Storms To-Night

and the lightning is sharp and heavy—will your lines be out of commission—your service discredited—your subscribers in bad humor—your troublemen and linemen distracted with work—and your repair expenses high?



Not if the

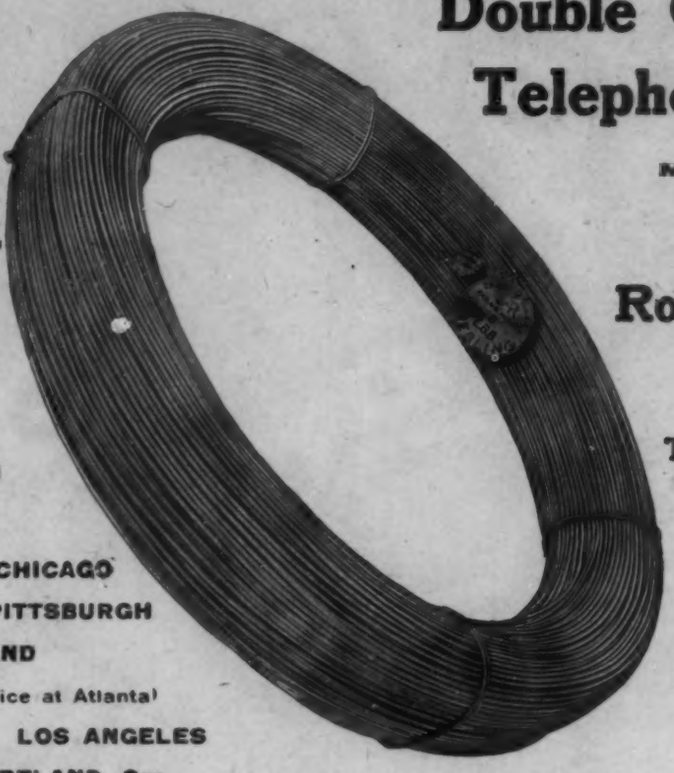
VAC-M

Lightning Arrester is protecting your lines.

THE NATIONAL ELECTRIC SPECIALTY CO.
TOLEDO, OHIO

Double Galvanized Telephone Wire

A wire made by the best processes from carefully selected metals. Is strong, high in conductivity and easy to string and splice.



MADE BY

John A. Roebling's Sons Company

TRENTON, N. J.

Shipments from Stock in Roebling warehouses at

NEW YORK CHICAGO
PHILADELPHIA PITTSBURGH
CLEVELAND
SAVANNAH (Office at Atlanta)
SAN FRANCISCO LOS ANGELES
SEATTLE PORTLAND, Ore.

Galvanized by an extra heavy covering of the best zinc spelter applied by exclusive shop methods developed from the experience of many years.

Klein's Chicago Grip
for Bare Wire

made of steel throughout and nickel-plated. Easily and quickly handled, light and durable. Holds itself in place when put on wire.

Pulls straight—does not kink the wire; made just right—it is a KLEIN tool—you know the quality is there.

Get a complete Klein Catalog

Mathias Klein & Sons

Station U-34 CHICAGO, ILL.

TRADE MARK REGISTERED
1900

THE best obtainable in material and workmanship is built into the 1900 Battery—

The most highly efficient telephone cell results.

Use 1900 Batteries for the longest service at least expense.

Nungesser Carbon & Battery Company

CLEVELAND, OHIO

TRADE MARK REGISTERED
1900

C. O. BAKER, President C. W. BAKER, Vice-Pres.

PLATINUM

Foil, Sheets, Wire, Rivets and Contacts

Anything Made According to Specifications

SCRAPS PURCHASED

SEND FOR LITERATURE

Baker & Company, Inc.

New York, N. Y. 30 Church Street

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To Try Them Is To Use Them Always

Belden Telephone Cords

made of carefully selected material in a factory where efficient methods enable lowest cost to consumer.

For better service — and longer lived cords — use the Belden.

Write for our catalog of cords and wire—*free samples upon request.*

BELDEN MFG. CO.

2302 South Western Avenue, CHICAGO

They Put The *"Age"* in *Cordage*

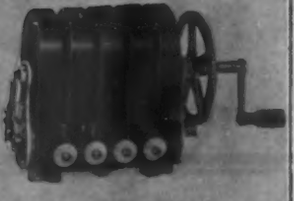
Runzel-Lenz Cords

Flexible and firm in just the right proportion—built for service—they wear like rawhide. If you send for free samples for tests—you're going to use Runzel-Lenz Cords the rest of your telephone life.

RUNZEL-LENZ ELEC. MFG. CO.
1751-1753 N. Western Avenue
CHICAGO, ILL.

BURNS EXPRESS
UNIT TYPE DROP & JACK

Several years successful use in hundreds of exchanges have proven the truth of our claims for this Board.



WE CAN PROVE TO EVERY BUYER, free to place an order solely on merit and price, that this *Burns Express Switchboard* and the complementary apparatus we offer is the best purchase. Send your requirements in board and phones now. You will get a proposition you can't afford to turn down. Everything in standard telephone apparatus from a busy factory, but with quick shipments.

P. S. Over a dozen Branch Stocks for quick delivery of "American" phones to any part of the U. S. A.

American Electric Company
STATE & 64TH STS., CHICAGO, U.S.A.

WRITE FOR CATALOGS TO-DAY

Date of Type

1902

1900

1898

1897

1896

1893

The Acme of Perfection

The Lastest 1913 Model

The result of gradual advancement through a series of progressive changes. The way of greatest progress is marked by perpetual improvements. Our policy does not allow us to be satisfied with one design indefinitely. This latest design No. 988 Type desk telephone combines all the valuable features of the several preceding types and many others originated with this type of which there has been three distinct models.

Common Battery
Code No. 988 Desk Telephone

There was no way to improve the quality or appearance of this model telephone so we have redesigned the switch mechanism and terminal block in the base. The construction is simplified and made adaptable for any type of cord terminal. Better action of hookswitch and more positive contact movement. Accessible and easily disassembled. No. 988 Desk Set has induction coil in base and two conductor stand cord. Made in five codes for both Local and Common Battery Systems. Equipped with No. 7-A Transmitter—the perfect transmitter.

Order By These Code Numbers

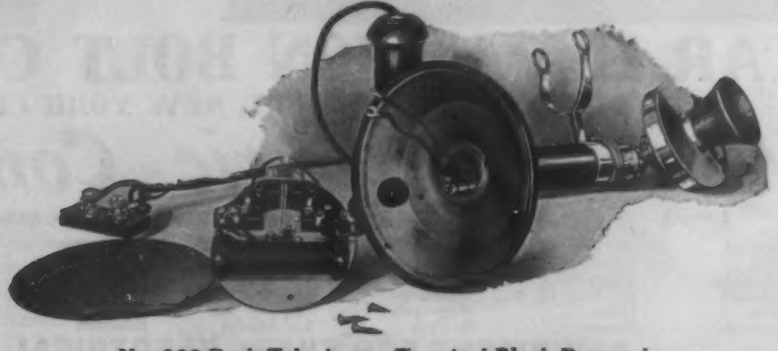
No. 986 Common Battery Desk Set—3 Cond. Cord
* No. 988 Common Battery Desk Set—2 Cond. Cord
No. 993 Common Battery Desk Set—Direct Current
* No. 991 Local Battery Desk Set—5 Cond. Cord
* No. 992 Local Battery Desk Set—3 Cond. Cord
* Induction Coil in Base of Desk Set

May We Send You a Sample ?

Stromberg-Carlson Telephone Mfg. Co.

Rochester, New York, U. S. A.

Chicago, Illinois — **San Francisco, Cal.** — **Toronto, Canada**
Los Angeles, Cal. — **Portland, Ore.** — **Seattle, Wash.**



No. 988 Desk Telephone—Terminal Block Removal

Wherever a Hole Can Be Drilled

SEBCO

SCREW ANCHORS AND EXPANSION BOLTS CAN BE USED

You can fasten telephones and all other electrical equipment to any hard substance in which a hole can be drilled.

Sebco Expansion Bolts and Screw Anchors are being used universally by electrical workers. Their use is practically insurance against accidents.

Made of non-rusting composition metal, Sebco Screw Anchors can neither rust nor will they rot. Equipment fastened the Sebco way is attached in a jiffy and up for all time.

The Sebco Screw Anchors will take all wood, machine and special screws from ⅛ inch diameter to ½ inch diameter. Several diameters of screws may be used in one size of anchor.

STAR EXPANSION BOLT COMPANY

147-149 CEDAR STREET, NEW YORK CITY

Western Electric Company

Manufacturers of the 7,000,000 "Bell" Telephones

New York	Atlanta	Chicago	Kansas City	San Francisco	Montreal	London
Boston	Savannah	Milwaukee	Oklahoma City	Oakland	Toronto	Antwerp
Philadelphia	Richmond	Cincinnati	Denver	Portland	Winnipeg	Berlin
Pittsburg	St. Louis	Indianapolis	Omaha	Seattle	Calgary	Paris
Buffalo	Dallas	Minneapolis	Salt Lake City	Vancouver	Johannesburg	Rome
Cleveland	Houston	St. Paul	Los Angeles	Edmonton	Sydney	(Tokyo)

EQUIPMENT FOR EVERY ELECTRICAL NEED

The "5 in 1" Convertible Telephone

You are prepared for the future growth of your exchange system when you install Common Battery Telephones with the No. 36-L Convertible Ringer. It is more economical and decidedly easier to substitute a **Reed Armature** to convert a straight line telephone into a first, second, third or fourth party Harmonic instrument than build another line. Our four party harmonic ringer will operate equally well on harmonic ringing currents produced from a harmonic converter or a multi-cycle motor generator set.

Code No. 951 Type

No. 36-L Convertible Ringer shown in telephone

Common Battery Telephones

The No. 36-L Convertible Ringer will be furnished with Desk and Residence Type, Metal or Wood Telephones besides the compact wall type telephone shown here. The No. 951 Type Telephone has become popular because of its simple construction and practicability for general use. Unusually accessible and as free from mechanical troubles as a sheet of iron. Built sturdy and of highest grade quality materials.

Order by these Code Numbers

951	Straight Line	No. 36-L- 500 ohm
952	16 Cycle Harmonic	No. 31-A-2500 ohm
953	33 Cycle Harmonic	No. 32-A- 500 ohm
954	50 Cycle Harmonic	No. 33-A- 500 ohm
955	66 Cycle Harmonic	No. 34-A- 500 ohm

It would pay you to examine and test this telephone now. Say—"Ship sample."

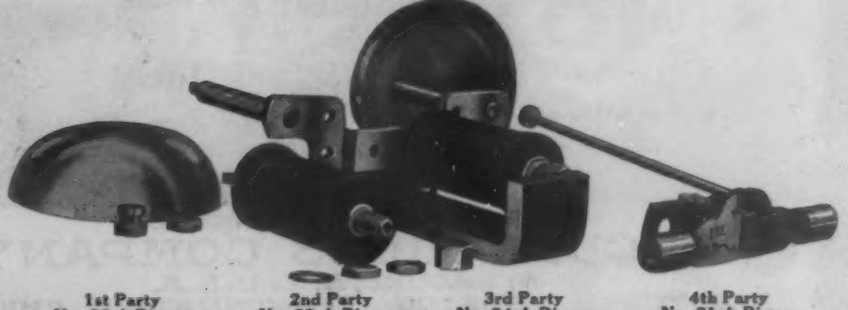
Stromberg-Carlson Telephone Mfg. Co.

Rochester, New York, U. S. A.

Chicago, Illinois — San Francisco, Cal. — Toronto, Canada
Los Angeles, Cal. — Portland, Ore. — Seattle, Wash.

A reed armature will be furnished for forty-five cents — substitute the No. 36-L straight line ringer armature and your telephone is converted into a first, second or third party instrument. For the fourth party telephone the ringer coils also must be exchanged as the fourth party ringer requires higher resistance—2500 ohms.

Disassembled Four Party Harmonic Ringer No. 32-A



1st Party No. 32-A Ringer 500 ohms — 2nd Party No. 33-A Ringer 500 ohms — 3rd Party No. 34-A Ringer 500 ohms — 4th Party No. 31-A Ringer 2500 ohms

Please tell the Advertiser you saw his Announcement in TELEPHONY

HARPOON GUY ANCHOR

STURDIEST, STRONGEST, EASIEST TO INSTALL, NO SPECIAL TOOLS,
JUST A SLEDGE AND A MAN TO SWING IT.
HOLDS TIGHT WHEREVER ANY AND WHERE NO OTHER
PATENT ANCHOR CAN BE INSTALLED.

CATALOG FREE UPON REQUEST

CROUSE-HINDS COMPANY

SYRACUSE, N. Y., U. S. A.

NEW YORK 30 CHURCH ST. | BOSTON 201 DEVONSHIRE ST. | CINCINNATI 18 E. FOURTH AVE. | CHICAGO 417 S. DEARBORN ST.

Announcement

You May Now Commence the Installation of the

Automanual

By Adapting Our Primary Selector to Your Present Manual Common Battery Multiple Switchboard.

It will give you perfect call distribution and the completion of Automanual may be added later as you desire.

The results of the first step of Automanual give your subscribers an operator answering time of one-half what you are now giving and your cost per 1000 calls will be reduced 33⅓%. With a contract for Ultimate Automanual this Primary Selector Equipment will cost you only $6.00 per line (wiring extra). Improvements that are self-paying.

NORTH QUALITY

WRITE TODAY FOR ESTIMATES

THE TELEPHONE IMPROVEMENT CO.

MONADNOCK BLOCK
CHICAGO

AMERICAN TRUST BLDG.
CLEVELAND, OHIO

"We have three thousand Kellogg transmitters and practically no repairs."

"I am putting your transmitters on other makes of telephones. It makes a big improvement."

"Being in the Independent Telephone field, we owe much to the Transmitter which has been of an untold benefit in the advancement of the Independents in this State. We wish to express our appreciation for the support the Kellogg Switchboard Company have given them."

"While repairing one of your desk phones, one of the troublemen found on the back of the transmitter the initials and date:

'H. T., Feb. 7, 1899'—1913

1899

14 years.

Pretty good advertising for your equipment, eh?"

"I have ten Kellogg telephones and these are in better shape than any telephones I had."

"We have the new board we bought of you installed and like it well, and when we buy another it will be a Kellogg."

"We have been going some since December 15th, having made a net increase in the Corinth exchange of fifty-one telephones. I guess this is some record for a four-hundred-line exchange."
(Kellogg—of course.)

"As a matter of interest to you, I beg to advise that one Kellogg transmitter, on ordinary wall rural telephone, delivered election returns in _____ on December 13th to 24,000 people in two and a half hours.
Three different makes of telephones were tried out on the circuit, as it was necessary to have a telephone that would talk. The Kellogg transmitter was found to be the best for the purpose."

"If any testimony that I may offer would help to put more of your instruments in the field of service they so rightfully deserve, I should feel doubly repaid for my effort. Allow me to say that we have a magneto switchboard in service here that I installed seven (7) years ago and $5.00 will cover the cost of repairs up to date, not including the cords, of course. Who can beat it? And again, gentlemen, in ten (10) years' or more experience with your instruments, I have never known or heard of one of your transmitters 'packing.' And the rest of the instrument is the same, BEST EVER. We have an advertiser in our town that advertised, 'If it's good, we have it.' I will say, if it's Kellogg, it's good.
Yours for good service."

These recently received voluntary letters are continued expressions of the quality that is

KELLOGG

The Handmicro

—is coming into its own; its worth is being recognized—its convenience and comfort and novel advantages are making a strong appeal to subscribers—*"Handy Mike" has made a hit.*

Have you considered introducing him to your patrons? Do you want your subscribers to have the latest and most efficient equipment? Do you know the *"talking power"*—the *"selling power"* of Handy Mike?

There are Ericsson agents scattered throughout the country who will take pleasure in "showing off" "Handy Mike."—Hunt out the nearest agent—know the Handmicro—or write

ERICSSON MFG. COMPANY

1102 MILITARY ROAD

Buffalo, N. Y.

"ERICSSON" AGENTS

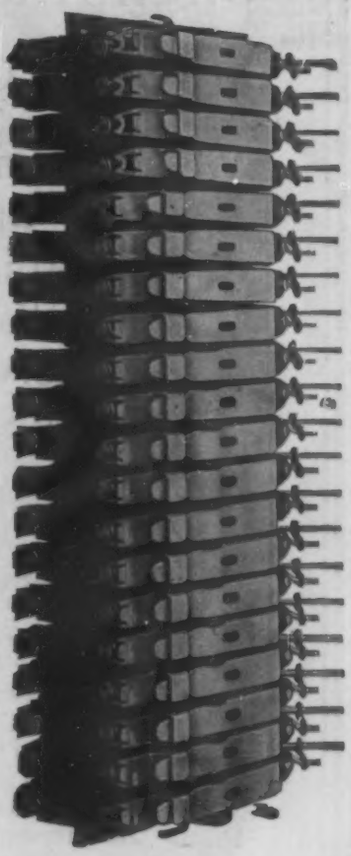
600 Preston Ave., Houston, Texas.
706 Paulsen Bldg., Spokane, Wash.
1111 Wyandotte St., Kansas City, Mo.
530 Golden Gate Ave., San Francisco, Cal.
214 So. Second St., Cedar Rapids, Ia.
5 Governor St., Richmond, Va.
513 W. Jackson Ave., Knoxville, Tenn.
28 Market Ave. S. W., Grand Rapids, Mich.
310 Terminal Place, Pittsburg, Pa.
24 W. Forsythe St., Jacksonville, Fla.
329 Ankeney Ave., Portland, Ore.
53 East Broadway, Butte, Mont.
22 N. 6th St., Minneapolis, Minn.
136 So. 10th St., Lincoln, Neb.
517 W. Main St., Louisville, Ky.
1733 So. Olive St., Los Angeles, Cal.
121 So. Meridian St., Indianapolis, Ind.
34 Adelaide St. W., Toronto, Can.
810 Canal St., New Orleans, La.
630 W. Peachtree St., Atlanta, Ga.
124 St. Clair Ave., N. E., Cleveland, Ohio.

COOK

Protect Your Apparatus With Protectors That Protect Themselves

This is made possible by using

Cook's No. 10 Protector



¶ The heat coil is not made of wire; it cannot burn out or short circuit.

¶ Metal shell will not burn up and start fire in the coils above.

¶ No defective coils or loose contacts tn circuit.

¶ Springs of each pair are insulated from adjacent springs.

¶ No bolt connections are used to transpose line and switchboard terminal consequently no loose connections in circuit.

¶ A re-soldering—not a self-soldering protector—the advantage is that every time pretective apparatus is re-set a test is made for defects in coil.

Write for Full Particulars

TERMINALS PROTECTORS

Frank B. Cook.

326 West Madison Street
Chicago

Western Representative:
Manny-Meyers Co.,
Seattle, Wash.

Southwestern Representative:
Tel-Electric Co.
Houston, Texas

CHICAGO U.S.A.

The Automaphone

is the only telephone rate raiser on the market for

MAGNETO EXCHANGES.

The smaller cities and villages demand common Battery Service. The objection to meeting this demand lies in the great expense of installation and maintenance of a common Battery Board. This objection is overcome by the use of Automaphones. They operate in connection with the Magneto Board. They furnish a substitute equal to common Battery Service without added expense.

Subscribers are demanding improved service and are willing to pay for it. These instruments give better service—cost you no more than other telephones—and get increased rates from the subscribers.

The difference between a paying investment and a losing venture in MAGNETO EXCHANGES is spelled in the word AUTOMAPHONE.

Here are a few of the large number of operating Companies now using the Automaphone. They will undoubtedly be glad to advise you as to the benefits derived from such service.

Skagit Valley Telephone Co.	Mt. Vernon, Wash.
Savanna Mutual Telephone Co.	Savanna, Ill.
Jasper County Telephone Co.	Rensselaer, Ind.
Washington Telephone Co.	Washington, Iowa.
Mazomanie Telephone Co.	Mazomanie, Wis.
Home Telephone Co.	Williamston, Mich.
M. W. & O. Telephone Co.	Millersburg, Ohio.
Jefferson County Telephone Co.	Fairfield, Iowa.
Brewster Telephone Exchange	Brewster, Wash.
Northern Iowa Telephone Co.	Cresco, Iowa.
Rosedale Mutual Telephone Co.	Rosedale, Ind.
Huron Telephone Co.	Huron, Ohio.
Edgerton Telephone Co.	Edgerton, Wis.
Union Telephone Co.	California, Pa.

We are Sole Manufacturers of North Electric Manual Apparatus, Common Battery and Magneto

Cracraft, Leich Electric Co.

Genoa, Ill., U. S. A.

THE DEAN ELECTRIC CO.

LOOK FOR "DEAN" WHERE "QUALITY'S" SEEN

DO IT NOW!

¶ Do not put off your plans for improvements in your exchange or instrument equipment any longer.

¶ During the winter, now fast drawing to a close, you laid careful plans for increasing your company's earning power and also its ability to produce first-class service.

¶ No matter in what form your requirements can be filled, we are in position to serve you.

¶ A careful investigation of our switchboard equipment always produces satisfactory results. We have a design for every need, and there is unquestionably a need for each of our designs. Freaks are not in our line at all.

¶ If magneto telephone came first to your mind, The Dean Electric Company's Demo Telephone is what you want. A trial will easily prove it.

¶ Our Convertible Steel Common Battery Wall and Desk Sets are more popular than ever. Equipped with our Direct Current Receiver Circuit, they still hold the same position which they assumed immediately upon being introduced—the best value on the market.

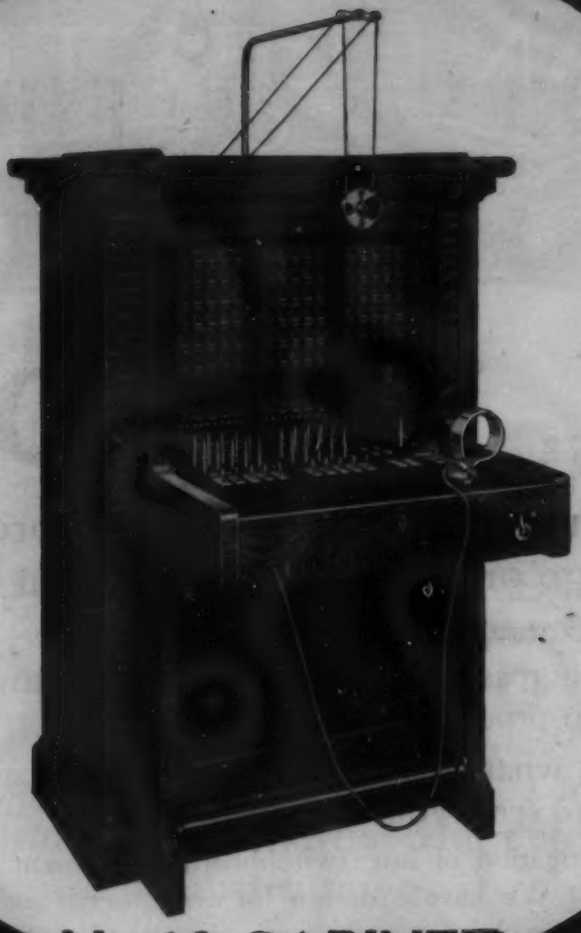
¶ Don't make expensive toll and rural line additions by actually stringing the circuits. Use The Dean Electric Company's Phantom Coils and see how much more you can accomplish with a ridiculously small investment.

¶ Also arrange to include your supply orders together with those for equipment. We handle the entire line which you use day after day. And, by the way,

Do It Now!

MAIN OFFICE AND FACTORY
ELYRIA OHIO.
BRANCHES
KANSAS CITY MO. SAN. FRANCISCO CAL.

A switchboard without an equal for design, solidity, workmanship and efficiency.



No. 13 CABINET

¶ Capacity — 100—No. 250 C. B. Visual Line Signals.
200—Type "A" C. B. Lamp Line Signals.
100—Type "S" Magneto Self-Restoring & Line Signals.
15—Pairs Plugs, Cords and Keys.

¶ Finish — Golden Oak, Flemish Oak, Mahogany or any special finish to match prevailing color scheme.

¶ Uses — Especially adapted to medium sized Magneto or Common Battery Systems and Private Branch Exchanges in Factories, Schools, Hospitals, Hotels and Mercantile Houses.

¶ Prices — Tell us the number of lines and system you desire and we will quote you attractive figures.

CENTURY TELEPHONE CONSTRUCTION CO.

BUFFALO, N. Y. BRIDGEBURG, ONT.

Please tell the Advertiser you saw his Announcement in TELEPHONY.

You Don't Have to be a Mathematician

To use a

MATTHEWS TELEHEIGHT

PATENT PENDING

Showing Matthews Teleheight and its convenient leather carrying case.

Possibly some of the readers of "Telephony" did not see the articles in the issue of April 12, 1913, entitled "The Uses of Instruments in Pole Line Construction Work" on pages 23, 24 and 25, and "Lineman, Spare That Tree" on pages 59 and 60. If you missed either of these articles it will pay you to get that copy of "Telephony" and read them.

The first shows a number of instruments that are used for estimating the height of poles, trees, etc., and it clearly indicates that **some** figuring and skill in their use is necessary.

The second describes Matthews Teleheight and shows that this instrument has got away from the college graduate and is graduated in such a way that us ordinarily intelligent folks can use it and with more accurate results than a graduate of the Massachusetts Institute of Technology.

Matthews Teleheight gives you the answer in poles. By its use any one (who doesn't even know how to divide 3 into 6 and get 2) can find the correct height of pole necessary to clear any obstruction 5 feet and make proper allowance for the depth of the pole in the ground, and he can do it in 3 minutes. Write for full particulars.

Sighting over part of tree it is desired to cross.

3718 Forest Park Boulevard, St. Louis

Another Endorsement for the AUTOMATIC TELEPHONE

This time from Brighton, Australia, where the government-owned exchange is to be converted from manual to AUTOMATIC.

A year ago the Engineers of the Australian Government decided to try out the AUTOMATIC and placed it in full operation in the Geelong exchange.

As usual, the success of the AUTOMATIC was instant, its popularity universal, and since then four other exchanges, those at Newton, Balmain and Glebe in the Sydney District, and Perth, have been ordered converted to AUTOMATIC Equipment.

This last 1,500-line order for use at Brighton, one of the Melbourne system exchanges, proves that the AUTOMATIC has the staying quality that means permanent success.

The AUTOMATIC not only LOOKS GOOD,
It MAKES GOOD.

AUTOMATIC ELECTRIC COMPANY,
CHICAGO.

Please tell the Advertiser you saw his Announcement in TELEPHONY.

16,000 Buffalo Telephone Users Asked for the

AUTOMATIC

Before the Federal Telephone and Telegraph Company of Buffalo adopted AUTOMATIC APPARATUS, a demonstration exchange was installed and inspected by tens of thousands of people.

The marvelous AUTOMATIC instrument made a strong appeal to everyone who saw it through its instantaneous service, accuracy, secrecy and convenience. Here are three out of 16,000 endorsements received by the Federal Company. Their writers represent more than 50 per cent of the city's population.

From Dr. Francis E. Fronczak, Health Commissioner of Buffalo and Leading Polish-American Citizen.

Mr. B. G. Hubbell, President, Federal Telephone Co., Buffalo, N. Y.

My Dear Mr. Hubbell:—

From certain things that have transpired recently I am led to believe that the Federal intends to install the automatic telephone for its Buffalo subscribers.

I, for one, and speaking for thousands of Polish-Americans, certainly congratulate you on this contemplated improvement. I am especially concerned for the reason that thousands of my people will then be able to enjoy the privileges of the telephone who are now denied that privilege because they cannot speak English. Polish merchants and merchandisers generally are showing the liveliest interest in this project.

I hope I am correct in my conclusion that the Federal intends to install the automatic. It is a fine piece of enterprise and again I congratulate you.

Very truly yours,
FRANCIS E. FRONCZAK.

From M. Caboni, R. Consular Agent of Italy in Buffalo

Federal Telephone Co.,
Buffalo, N. Y.

Gentlemen:—

I have been very much interested in examining the automatic telephone apparatus which you are demonstrating in your Church Street offices. It seems to be most practical and particularly adapted to the use of the people who are unable to speak English. I hope you will see your way clear to install it, especially for my own people, as I am confident that many who are at the present time unable to use the telephone could and would do so were they able to call by this improved method.

Yours very truly,
M. CABONI.

From Dr. Gustave A. Hitzel, of the German-American Alliance and One of Buffalo's Leading German-American Citizens.

Automatic Electric Co.,
1001 West Van Buren St.,
Chicago, Ill.

Gentlemen:—

I have been very much interested in the demonstration of the automatic telephone in this city for the past few weeks. I have used this telephone in Western cities with most favorable results. It occurs to me it is of the utmost importance to German-American residents of Buffalo, many of whom, I know from personal experience, are unable to use the present telephone system because of their inability to speak English. Since the numerals are printed universally the same, the use of the dial on the automatic instrument will simplify telephony to a wonderful degree.

May I ask if there is any likelihood of the automatic being installed in Buffalo by either of the two companies? I sincerely hope so.

Yours truly,
GUSTAVE A. HITZEL.

Are there any foreign-born in your territory?
The AUTOMATIC will get their business.

AUTOMATIC ELECTRIC COMPANY,
CHICAGO.

PARANITE

The Standard for Telephone use

Rubber Covered Wires and Cables

Braided, leaded and armored cables; plain and braided copper and iron wires of any number of conductors *Manufactured by*

Indiana Rubber and Insulated Wire Company
JONESBORO, INDIANA

AMERICAN CROSS-ARM CO.

CHICAGO

OKONITE
TRADE MARK
REG. U.S. PAT. OFFICE.

OKONITE
INSULATED
WIRES & CABLES

The STANDARD for RUBBER INSULATION
THE OKONITE CO., 253 Broadway, New York

Ten points of Excellence

1. The scale is uniform throughout the entire range of deflection.
2. The readings can be made with practically the same precision on violently fluctuating loads as on steady loads.
3. The indications are equally accurate on direct-current circuits or on alternating-current circuits of any frequency, power-factor or wave form within commercial limits. Therefore, these wattmeters can be calibrated with direct-current and used on alternating-current circuits without change of calibration.
4. The scale is flat and is therefore easily read.
5. The pointer is entirely free from vibration produced by mechanical resonance.
6. The power consumption is extremely small.
7. They have a large overload capacity, which will allow the measurement of full power at power-factors below 0.50.
8. They are far more reliable and durable than any commercial wattmeter heretofore built.
9. They are accurate within the limits of scale reading, regardless of changes in temperature, frequency, power-factor and wave form, within the range of commercial practice.
10. The zero position of the pointer can be adjusted from the outside without removing the instrument from the board.

In the **Weston Switchboard Wattmeter** every heretofore existing difficulty has been satisfactorily overcome by intelligent design and skillful construction and the results attained with these instruments are far in advance of anything ever accomplished in the art of commercial electrical measurement. Send for catalogue giving full information regarding our complete line of **A-C Switchboard** Indicating Instruments, Voltmeters, Ammeters, Wattmeters, Synchroscopes, Power Factor Meters, Frequency Meters, also D. C. Instruments.

WESTON ELECTRICAL INSTRUMENT COMPANY, Main Office and Works, NEWARK, N. J.

New York, 114 Liberty St.
Chicago, 1504 Monadnock Block.
Boston, 176 Federal St.
Philadelphia, 342 Mint Arcade.
Birmingham, Brown Marx Bldg.
St. Louis, 915 Olive St.
Denver, 231 15th St.
San Francisco, 682 Mission St.
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DUTY.

Don't be content with doing only your duty. Do more than your duty. It's the horse who finishes a neck ahead who wins the race.—Andrew Carnegie.

The Telephone Employe's Motto.

In the past few months, accounts have appeared in various news disseminating organs of the devotion to duty of employes of telephone companies. Local newspapers time and again have commented upon the heroism of telephone operators in sticking at their posts under conditions which were entirely out of the ordinary. The recent tornadoes in Nebraska and Indiana, the floods in the Ohio Valley and other parts of the Middle States, directed the attention of the public all over the world to specific cases of devotion to duty.

The operators in the Webster exchange at Omaha stuck to their posts although many were injured by flying pieces of glass and other material. The exchange was in the center of the tornado's path but was not demolished although badly damaged. One of the rooms was turned into a temporary hospital to care for the injured people of the neighborhood. But in the midst of this turmoil, the operators continued their work of making connections although some of their number were included among those in the hospital room. During the flood in the Middle West, the only news available to the outside world came over the telephone wires, sent by telephone employes who remained at their posts day and night during the trying times, constantly endeavoring to communicate over wires which were in serviceable condition one instant and useless another.

In Mexico City during the battle in February, operators stuck to their switchboards until the last moment and returned as soon as the battle was over. After the battle, the construction men and troublemen worked unceasingly to restore the lines so that service could be resumed.

After the floods and the tornadoes, all employes of the telephone companies worked for days with only a little time off for sleep to get the systems into condition for service. During the winter sleet storms several times laid pole lines on the ground but the construction men and all other employes disregarded personal considerations and lent their best efforts toward getting the lines back into service at the earliest possible moment.

These instances show that the telephone employes, when placed under trying circumstances, are taking as their motto the cry "Service First." Its application should be extended to apply not only to times of stress and strain, but to all times and conditions so that the slogan of all operating telephone companies, both Independent and Bell, should be "SERVICE FIRST."

How About It, Washington?

When is the Inter-State Commerce Commission to begin its investigation into the telephone situation? Since the day when Mr. Wickersham, attorney general of the United States under the Taft administration, handed the question of dealing with the Bell and Western Union wire trust over to the commission and withdrew to private life, there hasn't been much news out of Washington about this matter. Independent telephone men who have been to the capital lately and interviewed the powers that be, have been told that the investigation has not been sidetracked, but that preparations are making for a thorough inquiry into the situation.

The multiplicity of important questions that are pressing upon President Wilson and his cabinet for action is naturally great, but it is hoped that there will be no more delay than necessary in beginning this investigation. It is quite possible that the law officers of the Wilson regime will not agree with Mr. Wickersham that there is no basis for a prosecution against the Bell-Western Union coalition. In that case, however, it would be not difficult to refer the whole matter back to the Department of Justice and take it—temporarily at least—out of the hands of the commission into which Wickersham so precipitately pitched it in his effort to get rid of what he apparently considered a ticklish proposition.

Easy Roads Do Not Lead to Ease

By HERBERT KAUFMAN

If you try to make life too easy, you'll soon find it too hard. Ambition is a dream without an awakening, unless it makes your will as eager as your wish. Effort is exercise; endeavor produces endurance.

It's no trouble to cut through butter—but it won't develop strength. The hewer of stone wears the strong arm and bears the long labor.

Persistence is the key to existence. Success invariably rewards the good fight. Knowing what to do or how to do it won't bring results. Action must drive ability. The nail is useless without the hammer. Courage is the complement of knowledge. Easy roads do not lead to ease. Worn paths run to spots and things which others have already found. Opportunity is trampled under foot in the crowded thoroughfares. The greater chances always lie ahead. But the price matches the prize. If you want more than the average you must pay more to secure it. You can't buy with counterfeit attempts. The true coin of accomplishment bears the mint marks of grit and honest labor.

You can't have our best unless we have your best in return. You can't arrive unless you survive. Half journeys are wasted. Only the stride which lands you at the finish counts.

You can't take pleasure and indulgence with you in the climb. You must forego temptation and cut out the shortest cuts. The wrong road is never a long road—therein lies its danger.

If you meet with brambles and boulders, reflect that they are fewer toward the end. The more rugged you find the way, the less likelihood that you've been preceded.

You need no capital, but a fixed idea and the resolve to carry it out. Want a thing harder than the world wants to keep you from it, and you'll wear through every opposition and get it.

Mere knowledge isn't competition. The man who secretes must give way before the man who creates. A bulging forehead can't conquer a squared jaw.

When old Henry Harper died, he willed his million to charity and his will to his sons. This is the letter which they found in his strongbox:

"I gained my money from men weaker than myself, and I return it to them. If you are strong enough and bright enough to retain my estate, you have the necessary tools with which to build one of your own. If you cannot succeed without my wealth, you couldn't have succeeded in holding to it.

"Others will think that I have pauperized you, but I understand how great a legacy I have willed you: the incentive to prove yourself—the supreme right to test your powers without the handicap of assured maintenance.

"Go out into the world to earn and thereby learn. Rub against men and get an edge. Enjoy the most supreme of all recreations—the thrill of creation. Only the builder truly rises above his fellow."

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Strong Association Formed in Eastern Pennsylvania

New Association Organized at Meeting in Harrisburg Last Week of Representatives of Twenty-One Independent Telephone Companies—The Constitution and By-Laws—New Organization Has Strong Support in Its Territory and Conditions Indicate Successful Future

In reply to a call in the form of a circular letter sent out by H. E. Bradley, of the Eastern Traffic Association, and C. M. Thompson, of the Kellogg Switchboard & Supply Co., a meeting represented by 21 Independent telephone companies of eastern Pennsylvania convened in the main auditorium of the Board of Trade building in Harrisburg, Pa., on April 16, 1913, for the purpose of forming an association to be known as the "Eastern Pennsylvania Independent Telephone Association."

H. E. Bradley, of Philadelphia, was chosen temporary chairman and had charge of the work incidental to effecting a permanent organization. Cameron L. Baer was elected to act as temporary secretary. Mr. Bradley then read the constitution and by-laws of the Western Pennsylvania Independent Telephone Association, and after a short discussion they were adopted by the Eastern association, with the exception that the western limits of the association were designated by a line drawn north and south through the city of Altoona.

By-Laws of the Association.

The by-laws as adopted at the meeting are as follows:

Article 1.

The name of this association shall be the Eastern Pennsylvania Independent Telephone Association.

Article 2.

The aim and purpose of this association is to cement together in a firmer union all Independent telephone interests in all counties east of Altoona, and adjoining state, for the purpose of promoting uniformity of operation, maintenance and construction, to promote and defend all Independent telephone interests by moral effect, co-operation and such other available means as may be deemed advisable, to prevent the enactment of hostile legislation, promote the enactment and enforcement of laws that will encourage and stimulate development, and any and all purposes that are deemed to be to the best interests of the members hereof.

Article 3.

The officers of this association shall consist of a president, two vice-presidents, a secretary, treasurer, and an executive committee, to consist of three members. The president shall be a member and ex-officio chairman of the executive committee.

Article 4.

No officer of this association, as such, shall be entitled to any salary, or perquisite for services rendered to the association; but such officers shall be entitled to their traveling expenses when away from home on the exclusive business of the association, except when attending the meetings of the association. This provision, however, shall not preclude the payment of salary or per diem to such person, or persons, who may be employed under the provision of this constitution for the purposes and benefit of the association. The executive committee is also authorized to incur such necessary expense for clerk hire as from time to time the business of the association may require, but in no event shall the executive committee, or anyone representing it, incur liability on the credit of this association, either by itself or through others by it appointed, unless the money necessary to discharge such liability is in the fund of the association unappropriated for other purposes.

Article 5.

The officers herein provided for shall be elected by ballot upon the adoption of this constitution and thereafter annually at the annual convention in each year, and shall serve until their successors are elected and qualified.

Article 6.

As exigencies arrive there shall be appointed by the president a committee composed of three members, which shall be known as the committee on legislation and litigation, which shall have charge of all legislation affecting the interests of the association and inquire into all litigation that might affect the interests of the members, and the chairman shall appoint such other committees as the association shall from time to time direct.

Article 7.

The first quarterly meeting in each year shall be the regular annual meeting of the association, unless otherwise arranged by the executive committee; and special meetings may be held at such other times and places as the executive committee may from time to time direct. The call for any such meetings shall set forth the time, place and objects of said meeting. Meetings shall be held quarterly, day and place to be set at previous meeting.

Article 8.

Any person, firm or corporation, as such, owning or operating an Independent telephone exchange or telephone toll lines in eastern Pennsylvania and adjoining states shall be eligible to membership in this association upon an affirmative two-thirds vote of the members present at any regular or called meeting of the association, upon the payment of the membership fee and regular annual dues as provided hereinafter; provided, however, that application may be made in the interim between meetings to the executive committee, who may pass upon such applications.

Article 9.

Each telephone company operating an exchange or toll line shall pay a membership or initiation fee of $1 upon becoming a member of the association. All members shall also pay annually thereafter such sum not exceeding one cent per unit as may from time to time be levied by the executive committee; such levies to be payable within thirty days after call of the treasurer.

Article 10.

A majority of delegates or representatives of this association present at any regular or special meeting duly called shall constitute a quorum for the transaction of business.

Article 11.

No company, firm, corporation or individual engaged in telephone business in opposition to any member of this association shall be eligible to membership in this association, without the written consent of the member in whose territory said company may be operating.

A member of this association shall not connect with or receive toll traffic from any company, firm, corporation or individual engaged in telephone traffic in competition with other members of this association, without the written consent of the member with which said company competes. A member violating this article shall be excluded from membership in this association or dealt with in such a manner as may seem proper by the executive committee, or the association in annual session.

While it will not be necessary for companies operating within the territory described to become members of the association,

they shall adopt and use operating rules such as shall be adopted by the association from time to time. Failing to do this they shall be declared by the executive committee as disqualified and service refused.

If disagreements come up between the different companies and they cannot be amicably settled, each company shall appoint a representative and the secretary or president shall act as the third party and their settlement shall be final. Any company failing to comply with such settlement shall be refused service by all members, who shall be notified by the secretary at once, until settlement is accepted.

To encourage promoting and systematic building of systems and the proper protection of those who encourage extension of the business, it is a rule of this association that when once a company has filed an application for a franchise, procured a right of way, or done other work towards extending lines, the said promoters or builders shall be the sole owners of said territory until such time as they relinquish their rights to the same; that is, when one company starts work in a certain territory or district no other Independent company may apply for a franchise or secure rights until the company first starting work shall have given permission for the second party to do so. If, in the judgment of the second party, the first party is not working or doing their best to advance the work within a certain field, the first party may be required to show cause why they shall not relinquish as process mentioned in previous paragraph. It is not the intent of the association that parties shall get unoccupied territory and hold it for future development.

ARTICLE 12.

The president shall preside at all meetings of the association and executive committee and shall approve and countersign all orders drawn on the treasurer and shall be the general executive officer of the association for the purpose of signing contracts, bonds or other papers that may from time to time be necessary for the carrying on of the business and perform such other duties as may be prescribed by the association or this constitution.

ARTICLE 13.

The duties of the vice-president shall be—

Firstly: To act in the absence of the president and perform such duties as would devolve upon the president if personally present; each of the vice-presidents to act in the order of the number of district represented by him.

Secondly: It shall be the duty of each vice-president to organize his respective district as prescribed by the executive committee. The district organization, of which the vice-president of any such district shall be president, shall have charge of all matters which especially concern the district in question and such other matters as may be referred to it by the executive committee, making a report to the president of the association. And he shall keep in touch with the situation in such district.

Thirdly: It shall be the vice-president's duty to see that all companies or persons operating Independent telephone exchanges or toll lines in his district become members of this association.

Fourthly: The vice-president shall also secure from the local companies in his district such statistical information (which it shall be the duty of the local companies to furnish) as the executive committee may from time to time require.

ARTICLE 14.

The duties of the secretary and treasurer shall be to keep the record of this association and notify all members of any general or special meetings by the president and executive committee, and perform such other duties as the executive committee may require. The duties of the treasurer shall be to collect all moneys from the members of the association or other revenue herein provided for, and to safely keep and pay out the same upon order of the president duly approved by the executive committee.

ARTICLE 15.

The executive committee shall have general charge of the business and affairs of the association, except such matters as may be specially vested in and entrusted to the charge of other officers of the association, and no funds of the association shall be expended except with the sanction and approval of the said committee, and said committee shall perform any other duties that may be entrusted to it by the association.

ARTICLE 16.

Order of Business.

1. Meeting to be called to order by the president.
2. Reading of the minutes of the last meeting by the secretary.
3. Reports of officers and committees.
4. Appointment of committees, regular and special.
5. Presentation of new business.
6. Programme.
7. Hearing reports of committees.
8. Election of officers.
9. Transaction of miscellaneous business.
10. Adjournment.

ARTICLE 17.

This constitution may be amended at any regular meeting or any special meeting called for that purpose for which due notice of the proposed amendment has been given at the previous regular meeting upon the affirmative vote of a majority of all representatives present at such meeting.

PROCEEDINGS OF THE MEETING.

Following the reading of the by-laws, Mr. Bradley appointed a committee of three, composed of Cameron L. Baer, G. B. Rudy and C. A. Carl, to place in the hands of the temporary chairman the names of persons to be voted for to act as permanent officers of the association. The three named retired to a committeeroom and after a short deliberation placed in the hands of Mr. Bradley the following names:

For president, J. F. Stockwell, of the Keystone Telephone Co., Philadelphia, Pa.; for first vice-president, M. E. Reeder, of the Muncy Creek Telephone Co., Hughesville, Pa.; for second vice-president, Jos. F. Ogden, of the Merchants Telephone Co., Tunkhannock, Pa.; for secretary-treasurer, O. K. Kines, of the Cumberland Valley Telephone Co., Harrisburg, Pa. A vote was taken and those nominated were unanimously elected as officers of the new association.

Mr. Bradley called on the newly-elected president to take the chair. After a brief speech, Mr. Stockwell called on Mr. Kines to take the chair as secretary and treasurer.

The president then spoke of the importance of the association and the benefits that may be derived therefrom.

H. M. Tracy, of the Cumberland Valley Telephone Co., placed in nomination the names of the following as an executive committee for the association: G. B. Rudy, of the York Telegraph & Telephone Co.; Cameron L. Baer, of the Cumberland Valley Telephone Co., and C. A. Carl, of the United Telegraph & Telephone Co. Mr. Tracy stated that those named represented three of the most important Independent telephone companies in the association and should be the proper persons for the executive committee. Upon motion they were elected. Under the by-laws, President Stockwell is a member and ex-officio chairman of the executive committee.

E. D. Schade, of Johnstown, Pa., made the following motion, which was adopted:

"Resolved, That the chairman appoint a legislative committee, composed of five members, with power to act and to represent this association in all matters pertaining to or affecting

Independent telephone companies." The president of the association was thereupon made chairman of this legislative committee as he is entirely familiar with the conditions that exist in the state and has interests of large importance. Mr. Stockwell appointed H. M. Tracy, Jos. Ogden, G. B. Rudy and J. R. Lynch as members of the legislative committee. This committee will arrange for a hearing before the railroad commission of Pennsylvania.

At this time the secretary, O. K. Kines, conferred individually with those in attendance and secured the names of 46 persons who desired to become members of the association.

Some of the Addresses.

J. Walter Barnes, Fairmount, W. Va., president of the United National Independent Telephone Association and also president of the Western association, was introduced by Mr. Stockwell and favored the association with the following remarks:

"I hardly have recovered from my trip as I have traveled all night to get here. I am certainly glad to be here. The matter of associations appears to me very important and I am one of the old fellows in this work. Before I became identified with the telephone business I happened to be in the school business and in that way attended associations. After I became identified with the telephone business, the first thing I did was to attend meetings of the National association and never missed a meeting until this year. I did not go to Chicago, but we had a meeting in Pittsburgh which I attended, therefore, I did not miss a meeting after all. In the matter of the Independent telephone, Pennsylvania looks to me like the best field I know, and yet I think you can accomplish a great deal of good, such as has been done in western Pennsylvania. The idea, of course, is to have these associations for the purpose of extending lines, improving service and spreading the gospel of Independent telephones.

"It is certain that John Harvard was the founder of Harvard University in 1834. When President Elliott, a few years ago, decided that he wanted to learn more about John Harvard he went abroad and made search on all the records he could find about this noted man, but he could not find anything. He went along different alleys and byways, searching everywhere he could, as he thought he belonged to the common class. so finally passing through an alley one evening he saw a sign and on this sign was "John Harvard, lamp lighter," and he thought: 'That is an ancestor or maybe a relative, and he can tell me something of his existence.' He went in and investigated but found it not so. John Harvard was really a lamp lighter. As the few books which he gave to Harvard University in the beginning lighted the lamp of intelligence, so we, the Independent telephone companies, when we started in our immediate communities, became veritable lamp lighters. We lost money in the beginning, but we spread the gospel of Independent telephones. These associations are to become a basis whereby we are to light our lamp and give power."

B. G. Hubbell, of Buffalo, N. Y., president of the Federal Telegraph & Telephone Co., was then introduced and spoke as follows:

"I have a kindly interest in Pennsylvania Independent telephone companies. I look at the good side of the telephone business and pass over those things that are troublesome, or remedy them, for they can be remedied, and, if I say it, the Independent side of the telephone business is very interesting and as remunerative work as any.

"The Bell company, it has been reported, in building its system so that it could give universal service, was handicapped and it cost more to operate than it did to furnish restricted service. It was able to furnish that service at a cheaper rate than by giving universal service.

"I think it is manifest that neither the Bell nor the Independents give every possible service that is required, but statistics prove to us that 98 per cent. of the telephone service is local; that is, local within the business radius, from 50 to 75 miles; and 95 per cent. of the other 2 per cent. is within a radius of 200 miles. Now, if that is true, it necessarily follows that those operating in a restricted territory with first-class service and plant will carry 98 per cent. of the business. That is the class of service the public wants, provided they can get it cheaper than the company of the universal service can give it. The Independent telephone companies are so organized that they can do this, and if they are able to furnish the requirements of the public in their districts, they will be able to compete with the Bell telephone company in a pleasant manner and get business in a safe manner for the investment of its securities. It is also one of the most permanent lines of business that anyone can be interested in. One cannot build any line of business and let it alone to grow by itself or without attention."

Mr. Bradley, in the absence of the president, introduced John H. Wright, of Meadville, Pa., who spoke briefly.

The president, Mr. Stockwell, then introduced E. D. Shade, general manager of the Johnstown Telephone Co., whose company has just come out victors in a fight with the Bell. Mr. Shade said in part:

"I cannot stand for much fighting, but I am glad to have this opportunity to speak to you, because I believe it will be my last time. I am now indicted by the court for conspiracy all because we did to the other fellow what he wanted to do with us, only we did it first.

"When the C. D. & P. T. Co. was taken over and merged with the Pennsylvania Bell, the Pennsylvania Bell office went officially to Johnstown, and yet the report was that they would duplicate the Johnstown exchange or underground cable covering 80 per cent. of the district of Johnstown, or five or six boroughs included in the borough proper. Their own estimate shows that they spent one-half million of dollars. The result is that we have had the largest net gain we have ever had since we have been in existence. The last trouble was to find lines to accommodate the public, and our net gain for the first quarter of this year was 360 subscribers.

"We have never appointed a committee in the Western association that only reported progress, but they have reported what they had actually done. Now, that is usually the main trouble that I see in an association of this kind. If your committees will attend to the business, or work, in their hands, your association will become as successful as the Western Pennsylvania Association, which is known all over the United States as the association that does things."

Wm. B. McCaleb, receiver of the United Telegraph & Telephone Co., was next called upon and spoke in part as follows:

"I have learned if you do not have organization, you will be swamped one way or the other, especially by the legislature. One purpose of this association should be to try to avoid having unfair statutes passed, and to take action before they do, instead of waiting until they do it. We no doubt are going to have in this state a public utility commission. That commission will positively control us, and we cannot turn around and do anything without an order of the commission. That is what the telephone companies are coming to, and I trust you have realized it and have formed these associations to take care of your interests. If you do not take care of them, no one will. I feel highly honored in meeting with you, although only a beginner in the telephone business as a receiver, and hope to be able to turn the company over to its real owners in as good condition, at least, as when I received it, if not better."

The president announced that he would try to have a program prepared for next meeting and, if possible, have papers discussed for the enlightenment of the association. It was voted that the time and place of the next quarterly meeting, which will be held in July, be left in the hands of the execu-

tive committee. If any persons desire to have the meeting they will be expected to so notify the executive committee.

P. F. Hartranft asked whether any member of a company belonging to the association would be entitled to attend the meetings and be recognized as the official representative of that company. The president replied that any member could attend by proxy provided the company did not send any more than its allotment. Only the person that represents the company officially will be entitled to a vote.

Resolutions Adopted.

The following resolution, introduced by W. H. Wilson, of the Union Telephone Co. of Erie, Pa., was adopted:

"Whereas, The Eastern Pennsylvania Independent Telephone Association, held in Harrisburg, Pa., April 16, 1913, has defined its territory east of a certain line drawn north and south through the city of Altoona in the state of Pennsylvania, therefore, be it resolved, that all members of the Western Pennsylvania Independent Telephone Association are hereby elected as honorary members of the Eastern Pennsylvania Independent Telephone Association, and are welcome to attend any or all of the meetings and participate therein without the right to vote."

Upon motion the meeting adjourned to meet again in July at a time and place to be named by the executive committee.

At a meeting of the legislative committee of the Eastern Pennsylvania Independent Telephone Companies Association, held in the office of Mr. Tracy, Harrisburg, Pa., on April 16, the following resolution was passed:

"Whereas, The Pennsylvania State Railroad Commission has by circular letter, dated April 2, 1913, directed to the telephone companies of Pennsylvania, suggested a classification of rates according to a schedule enclosed with said circular letter, and requested that any objections thereto be communicated to the commission, and,

Whereas, It is the unanimous judgment of this association that all the rates suggested therein would be ruinous to the successful operation of telephone companies, not being sufficiently remunerative to cover the cost of operation and maintenance of plants and a reasonable return on the investment, and,

Whereas, The operation of telephone companies has of recent years become more expensive, particularly because of the public demand for continuous and prompt service, for modern appliances and for cable in the streets of even the smaller boroughs and municipalities, so that it is impossible to properly maintain and operate at a reasonble profit, even in municipalities from the fifth to the eighth class in said circular letter, at less than $18 per annum, and,

Whereas, If the rates suggested were established the telephone companies would be unable to earn sufficient revenue to properly maintain their plants so as to give efficient public service and the results would be a slow deterioration of their plants and ultimately would result in the destruction of their property, and,

Whereas, The supreme court of our state has held 'That public service corporations, when properly managed, are entitled to a rate of return of not less than the legal rate of interest, and a system of charges that yields no more income than is fairly required to maintain their plants, pay fixed charges and operating expenses, provide a suitable sinking fund for the payment of debts and pay a fair profit to the owners of the property, cannot be said to be unreasonable and will be sustained by the court,' and,

Whereas, The rates suggested would, in the judgment of this association, amount to a confiscation of property rights, therefore be it

Resolved, That we firmly protest against the enforcement of the rates suggested by the state railroad commission and request that a conference be held with a joint committee from the Independent telephone companies of eastern and western Pennsylvania to consider the feasibility of establishing a maximum uniform rate for the different classifications of service, in order that the rates so agreed upon shall be reasonable to the public and also to the telephone companies and shall not be confiscatory. And, therefore, be it further

Resolved, That the language of House Bill No. 183, relating to public service companies, on the 5th and 6th lines of Sec. 8, on page 27, be changed by striking out the words 'the same, and substituting the word 'any,' and that this correction be brought to the consideration of the committee in charge of the bill."

Association Membership.

The applications for membership secured at the first meeting were as follows: J. F. Stockwell, Philadelphia, Pa., Keystone Telephone Co.; H. H. Weber, York, Pa., treasurer York Telephone & Telegraph Co.; Henry M. Tracy, president and receiver, Cameron L. Baer, operating manager, and O. K. Kines, auditor, Cumberland Valley Telephone Co., Harrisburg, Pa.; A. L. Croft, Carlisle, Pa., division manager, W. G. Underwood, Chambersburg, Pa., division manager, H. W. Hart, Hanover, Pa., division manager, and S. E. Fetterhoff, Lewistown, Pa., division manager, Cumberland Valley Telephone Co.; W. B. McCaleb, receiver, C. A. Carl, general manager, and J. R. Lynch, auditor, United Telephone & Telegraph Co., Harrisburg, Pa.; J. M. Powell, Shamokin, Pa., division manager, A. Paul Rohrman, Lancaster, Pa., division manager, W. W. Withington, Sunbury, Pa., division manager, B. C. Ketring, Norristown, Pa., division manager, John A. Grundy, Chester, Pa., division manager, Walter A. MacLaughlin, Altoona, Pa., division manager, P. R. Laudermilch, Lebanon, Pa., division manager, W. P. Wilson, Bloomsburg, Pa., division manager, A. M. Beardsley, West Chester, Pa., division manager, and L. C. Pershing, Pottsville, Pa., division manager, all of the United Telephone & Telegraph Co.; J. F. Ogden, Tunkhannock, Pa., general manager Merchants' Telephone Co.; H. A. Oberdorf, Columbia, Pa., general manager Columbia Telephone Co.; H. W. Smith, Bellefonte, Pa., secretary, Bald Eagle Telephone Co.; M. E. Reeder, Muncy, Pa., president, Muncy Creek Telephone Co.; M. H. Murphy, Elmira, N. Y., general manager, Bradford County Telephone Co.; H. W. Johnson, general manager, and Eli M. Martin, Enterprise Telephone Co., New Holland, Pa.; H. G. Cassner, Warrensville, Pa., Loyalsock Telephone Co.; P. F. Hartranft, Montgomery, Pa., White Deer Telephone Co.; J. Stewart Groupe, Jersey Shore, Pa., secretary, Nippenose Telephone Co.; Harry R. Miller, Waynesboro, Pa., president Bethel & Mt. Etna Telephone & Telegraph Co.; W. M. McKenney, Avis, Pa., manager, Clinton Telephone Co.; J. F. McCormick, Lock Haven, Pa., secretary, Nittany Telephone Co.; S. H. Mounce, Lansford, Pa., manager, Carbon Telephone Co.; S. S. Van Trump, White Hall, Md., treasurer, Union Telephone Co.; J. A. Kohler, Port Royal, Pa., president, Orbisonia Telephone Co.; J. C. Wambaugh, Muddy Creek Forks, Pa., treasurer, York Eastern Telephone Co.; Henry R. Shoop, Halifax, Pa., president, Carsonville Telephone Co.; G. D. Yost, Dillsburg, Pa., treasurer, Carroll Township Telephone Co.; John H. Wright, Meadville, Pa., Meadville Telephone Co.; and B. G. Hubbell, Buffalo, N. Y., president, Federal Telephone & Telegraph Co. Applications were also received for the following associate members: C. M. Thompson, Philadelphia, Pa., Kellogg Switchboard & Supply Co.; H. S. Young, Philadelphia, Pa., H. C. Roberts Electric Supply Co.; and the Double-Day Hill Electric Co., Pittsburgh, Pa.

National Ownership of Telephones.

A resolution to the effect that the federal government should acquire the telegraph and telephone systems of the nation and administer them immediately was adopted recently by the legislation committee of the Los Angeles city council and will be presented to the council within a few days. If it is passed by this body, copies of the resolution will be sent to the members of congress and the senators and representatives from California.

The resolution was originally adopted by the city council of Cleveland, Ohio, and was forwarded by that body to the city clerk of Los Angeles with the request that it be adopted by this city. The same request is being made of all municipalities throughout the country.

A Tone Test and Some of Its Applications in Practical Work

Description and Utilizations of Handy Device in Locating Trouble in Multiple Circuits—Can be Used as "Busy Tone" or Howler—How Used by Cable Men for Tone Testing and Locating Ground and Crosses

By A. W. Clement

A handy tone test that has been used with success for many things, mainly for trouble locating in multiple circuits such as multiple jacks, order wire keys, and listening keys, is described in this article. It serves very well indeed as a "busy-tone" or as a howler, and is quite useful in cable work for either ordinary tone testing or the location of grounds and crosses by the so-called "wireless" method.

The principle of the tone is shown in Fig. 1-*A*. A relay *R* of the spring cut-off type is wired like a buzzer, its contacts being in series with the winding, one of low resistance, say 30 ohms. A small helical spring, such as a half length of the kind used on telegraph relays, is connected to the armature, pulling in the direction of assistance, and is used for making the tone "fine" and steady. To the contact is attached another spring somewhat stronger than the other, pulling in the same direction. It serves in assisting the contact to break, which should be rather stiff normally. When adjusting, this spring should first cause the contacts to open, with the battery on and the armature spring loose; it should then be released until tone starts which can then be steadied up by means of the armature spring. Fig. 1-*B* illustrates the method of attaching the springs.

An induction coil such as is used in any local battery or magneto telephone set is connected across the winding of the

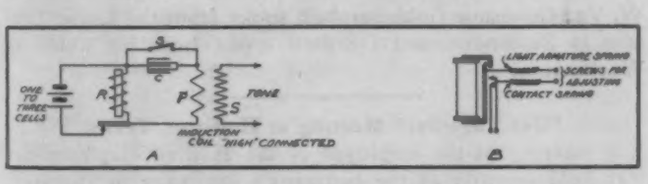


Fig. 1. Tone Principle—Arrangement of Adjusting Springs.

relay, using the primary for "high," and the secondary for "low" connecting as will be explained later. A condenser *C* is in series with the relay and coil for keeping the tone low when it is being used just for tone purposes, and for saving the battery. For increasing the strength of the tone, such as for howling and trouble locating, a switch *S* is provided for short circuiting the condenser.

The "low" connection gives a tone of very strong current value, making it very useful for locating trouble in the multiple or cables, provided that the resistance of the circuit across the terminals is less than 100 ohms; if of higher value, the "high" connection should be used, as a much higher voltage can be obtained in this way, overcoming the resistance of the circuit. It is generally unsatisfactory to try to work with circuits of greater resistance than 500 ohms, although conditions cause this figure to vary considerably, depending mainly upon the gage of the conductors under test.

Fig. 2-*A* shows the method of using the set to locate grounds in cable by means of the "wireless" test, and Fig. 2-*B* that for crosses, other than individual pair crosses. Both are handled the same way, the tone being connected, one side to the wire in trouble and the other side to ground or to the other wire crossed. A small coil connected to a receiver is then passed along the cable, a tone being noticed while between the test point and the cross. When on the other side of the trouble no tone whatever will be noticeable. If on a long cable, a test by means of the ordinary bridge will serve to show where to start looking for the tone. Much time will be saved by not having to run over the entire distance between the cable end and the trouble.

A suitable coil for this test can be made by winding onto a box about six inches on its greatest side, the entire winding

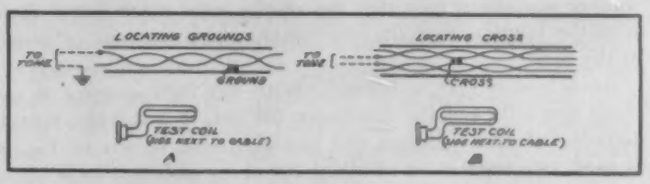


Fig. 2. Tone Principle Applied to Wireless Cable Testing.

from a 500-ohm drop or something similar. A high wound receiver of about 500 ohms would be more sensitive with this outfit but it is not essential. The tone test should be connected "high" or "low" according to the rule previously given, a little practice soon enabling one to determine the proper way for any particular case. This test, using only two dry cells, has been used on 200-pair aerial cables with good results.

For locating multiple jack troubles by the "split receiver" method, great success has been experienced. Fig. 3 gives the set-up. The tone is connected as for the wireless test, the high and low connections being governed by the same conditions, although the low is most commonly used. The tone is picked up in this test by direct conduction instead of by induction as in the cable test. A receiver on cords is connected in adjacent sections to one of the wires in trouble and the "drop" between the points of connection is usually enough to permit the tone passing over the wire, to be partly shunted through the receiver.

The intensity of the tone would depend upon the resistance of the cross and the size of the conductor under test. For instance, if a tip and sleeve are crossed in an exchange where the talking pair is heavier than the third wire, it would be better to connect the receiver to the sleeve as there would be a larger drop across a section of it than across a section of the heavier wire. Crosses due to pencil points or bent terminals would also show up much better than a bushing partly burned, which has a much higher resistance than the others. Upon getting beyond the trouble, there would naturally be no path for the tone to flow, and so no tone would be noticeable in the receiver.

The same principle may be applied to locating trouble in multiple keys, such as order wire and listening keys. Applying it

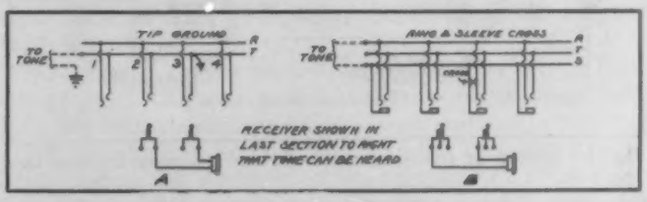


Fig. 3. Multiple Trouble Locating.

this way saves much time spent in poking around key cable forms with resulting damage. Of course this should only be used after the ordinary method of tapping and shaking the keys has failed to make a location, or time will be wasted in setting

up the outfit. The test will be most sensitive in cases where the key strapping in position keyboards, is looped into the key form instead of being strapped straight across, a greater drop resulting. Relay and other multiple circuits may be handled in the same manner.

Acting as a "busy tone" is another accomplishment of this pedigreed apparatus. As such it should be connected "low" with the condenser cut in. It is able to stand a very heavy load without any appreciable drop in tone volume or pitch. It may, as is desired in many cases, have ground or battery connected to it for signaling purposes, as the interrupter part of the set is in an independent metallic circuit. As a "busy tone" it may be mentioned that this was used for several days between Chicago and Milwaukee, over an entire cable circuit, by the trunking operator in Chicago. It was claimed by the Milwaukee equipment men that the results were much better than with the regular machine interrupter, which was out of order at the time.

As a howler "it's a beaut." With the high connection on three dry cells and the condenser cut out, it will wake up the soundest sleeper. Unless the special circuit shown in Fig. 4 is used, two resistances of about 300 ohms each will have to be connected across the terminals in series. Their junction should be grounded in order to prevent the extremely high open circuit voltage from passing out on the line, causing bad induction when the receiver is hung on the hook. It is best, also, to connect a condenser in series with the line, as this will tend to smooth out the interrupted current and help to reduce the induction.

This circuit was installed in a test desk, replacing the standard machine howler and gave excellent results with the use of three dry cells. It is an actual fact that it awakened a man who was sleeping in a room separated by three closed doors from that in which the telephone was placed, and caused practically no induction on other circuits. This fact, however, was not sworn to before a notary, so perhaps no claim can be made for a medal for marvelous achievements. For magneto circuits, the relay *R* and lamp should be omitted, the leads *A* and *B* being carried to key contacts *X* and *Y*. The ground connection of the condenser should also be removed.

There is one more service to which this apparatus can be put which deserves mention. That is the approximate location of opens in cables or line wires. Frequently when testing out new exchange wiring, a number of spans will be found in the switchboard cables due to poor butting; also where two cables meet on one frame block, as in the case of line answering jacks that are wired directly to the relays, opens will occur due to loose connections at the block. By means of this tone test it may be determined by testing from the switchboard, or end of any cable run, just about where the open is, whether at the jack, block, or relay in the case of answering jacks, or whether at the near or far end of multiple jack cabling, etc.

The circuit for this service is shown in Fig. 5. The tone,

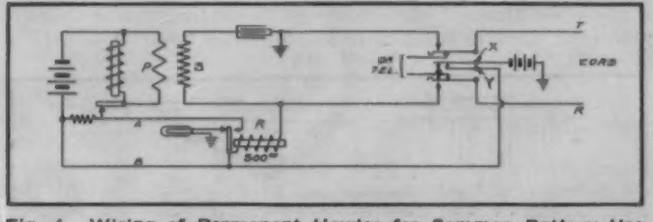


Fig. 4. Wiring of Permanent Howler for Common Battery Use.

low connected and condenser out, is connected in series with a receiver, to the circuit in trouble if a pair, or from the wire open to another wire in the same cable, if a single. If the open is at the near end, no tone to amount to anything will be heard, but if it is at the other end, a tone will be heard of the same volume as that noticed on a similar good circuit or wire.

Opens at intermediate points in the cable, which are seldom met with, would have tones of values corresponding to the distance away from the point of test. In the case of open line testing, this fact enables the testboard man to tell, with a little practice, whether the circuit is open in the office, at a cable box, or at some test station on the route, etc. The writer

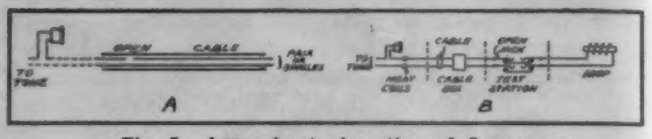


Fig. 5. Approximate Location of Opens.

used this arrangement for locating opens in switchboard cables at one time on a fire job, where, due to the rush, a great many butt troubles developed and the time saved was considerable. A list was made at the switchboard showing the trouble location according to the test made. When the testing was finished, men went to the various points on the circuit and all cases were cleared up at once. The useless opening of many cable butts was also saved.

Baltimore Banqueters Hear Speakers by Telephone.

At a recent banquet in Baltimore, attended by 350 employes of the Chesapeake & Potomac Telephone Company, which operates in three states, a telephone receiver was installed at each plate and those assembled were enabled to listen to after-dinner speeches delivered by Governor William Hodges Mann, of Virginia; Governor William Hatfield, of West Virginia; Governor Phillips Lee Goldsborough, of Maryland, and Alexander Graham Bell, of Washington, D. C. Governor Mann spoke to the banqueters from an easy chair in the east room of the executive mansion at Richmond, Va., Governor Hatfield spoke from Charlestown, W. Va., Governor Goldsborough spoke from the Lyric Theatre in Baltimore, and Dr. Bell spoke from his home in Washington.

"Get Together" Meeting at Houston, Texas.

A meeting of the employes of the Home Telephone Co. was held recently at the company's exchange in Houston, Tex. The object was to get the employes together on a friendly basis to offer suggestions on construction and plant work.

L. P. Wells, manager, opened the meeting with a short and direct talk on the ideas the company expects to carry out through the association of the Brazos Valley Telephone & Telegraph Co. He considered a telephone exchange a great wheel, and every employe a spoke in that wheel. If the men got together, talked automatic and worked hard for the company's interests generally, the Houston Home Telephone Co. would eventually become one of the greatest automatic exchanges in the South, and thereby all employes would be benefited.

J. S. Engh, plant chief, talked interestingly on the work of the whole exchange, and gave the employes to understand that at any and all times suggestions from any of them would be greatly appreciated. If the suggestions were found to be for the company's advantage, they would be carried out.

Following Mr. Engh's talk, questions were asked and suggestions of value, both in the interest of the company and of the employes, were offered. This meeting was only the beginning of the "get-together" meetings which will be held about twice a month. It is believed that much benefit will result from these meetings as the one already held has made the employes feel that the company is being managed on a basis of friendliness toward them, and naturally, they will be more friendly toward the company, and will pull harder for the company's interest.

The Passing Show of April

Improving Conditions—Some Flood Echoes

By J. C. Kelsey

This story is the fifth straight that I have written on trains—had to do it, amid the rattle and roar of steel! Queer, too, every one of the trains has been a fast-flying Pennsylvania Limited. I am somewhat partial to this cold-blooded corporation.

You could almost imagine that my handwriting would be hard to read, like a telegram. But I am assured that even at its best it is the worst. I always did worry the Spencerian copy book.

As a boy, I liked the roar of cannon and the rattle of musketry. In those days, every town had an active G. A. R. and its members were young and lively. Twenty-five years makes a great difference in spryness.

My town had an annual sham battle at the fair grounds, and we could always borrow two big artillery pieces from Fort Leavenworth. It was a great sight!

But my war career met its Waterloo in a competitive examination. West Point could accept my body but they demurred on my head!

Hence, I had to do something where I could enjoy the rattle and roar of something. So I became a traveling salesman.

A man once sneered at my humble occupation, telling his readers that I had to add to my "scanty" income by writing screeds for telephone journals.

Of course, this remark was made in the heat of battle. It came at a time when I had made up my mind to keep still and write no more. And I changed my mind, too. I am still at it—adding to my scanty income!

A man who writes all the time, or talks all the time is bound to say something which hurts some one. I have a fine exhibit of enemies, I know.

I have run foolish chances trying to focus your attention on one thing, the advantage of local ownership, and your strong economic position. But as I look over the telephone field and note the changed conditions, I feel well repaid for any effort I have made.

There is a changed condition. And it has come about within the last two years.

When we began to fight, it looked as if the Bell company had determined to grab everything in sight, by the mere force of money. Today, they have a realization that there are weak spots in their armor, and they are willing to admit those weak spots and give them up.

In other words, there is a realization that the small locality is better handled by a local company—that the cost of handling a local company is more than doubled by its acquisition by the big company.

And that the increasing of rates in a ratio large enough is hopeless. We all know how hard it is to get that extra quarter per month. And how hopeless to get an extra dollar.

Consequently, the efforts of the universal company must be confined to larger localities, where their activities will be appreciated and rewarded, too, in a substantial way.

I just passed through Johnstown, that once storm-stricken city, where a flood once ran riot, and where rich and poor camped in attics, glad even to keep alive.

This town has just passed through another storm—this time it was a telephone fight.

"Local" versus "Universal." It did not last many rounds before it was apparent that "local" had the better wind, and his punch had lost no vigor.

This battle was a test of all my early theories. It demonstrated to me that no local independent telephone company need have any more worry. Because their strong economic position had been demonstrated.

I think all the talk of waste of duplication has been overdone. None of us believes in waste, because we are taught from early childhood that "wilful waste makes woeful want."

I just read a story in which people decided to waste no more. No man smoked nor drank. No more theaters. No money was spent but for bare, actual necessities. Business waned. A great panic struck us, and general ruin stared us in the face.

Of course, this was an imaginary story, but when you get down to facts, the elimination of waste would make a great deal of trouble in the world. It almost seems necessary to pass it along and let every one live.

It is said the French housekeeper could feed her family on what your family wastes. Let's don't worry about it anyway!

I don't believe in building a plant where one already exists, and one which is trying to charge enough for its service, especially when the existing plant is Independent. But to listen to public clamor and build a new plant at popular rates, only makes future trouble for you. Civil war was ever futile.

Heeding popular clamor is a poor sport. It has no permanency. You may be the public friend today, but you will be dodging rocks later.

Is your house in order? Are you expecting to meet the new order of things successfully?

You can never escape control by the state. That is inevitable. You must submit to it, too.

The National association has just made an excellent move. It has appointed a committee to prepare a list of reproduction values.

Most state commissions lack the funds to hire engineers to do this. The association is going ahead and do this for them.

The whole tendency today is to reduce public service corporations to a return on physical value alone.

You may yet have a hard time getting a return on good will or franchise. Hence, it is quite necessary to have reproduction costs well understood.

In our business, it should be as clearly demonstrated what a thirty foot pole is worth, all set up, as is the cost of a dozen eggs. We should have a unit of value for overhead and underground cable in place. Telephones also in place, and switchboards.

There is nothing secret about it, and we all know it costs like sixty to build telephone systems. Get busy with your lead pencil and let the committee know what it cost you.

This committee is a good one. Charles Tarte, of Grand Rapids, George W. Robinson, of St. Paul, and C. Y. McVey, of Cleveland. You can't beat this committee.

I am tired of the tendency toward secrecy in our business. It all came from early days, when blue prints were as sacred as the white elephant of Siam.

I got called down severely for my second article in

TELEPHONY, February of 1901. I was trying to show how trunk circuits had improved.

I even got thanks from Bell superintendents. They had been unable to learn a thing about the new and sacred trunk circuit until they saw it in TELEPHONY.

So I quit TELEPHONY for a long while. But I had it in my system and I came back to it, of course, after I had quit Bell service.

Today we find excellent magazines published by Bell licensee organizations. And they are not skimping any information, either.

So let's go to it, and get up such an analysis of our business that when you are summoned before a commission to show cause why your rates should not be lowered, you will be there full of facts and will not have to call for help.

That is why I ask if your house is in order. And right here I want to tell you a story.

I know a man who was general manager of a nice big telephone company. He was a good man and his service was tip top.

Not long ago, a rate fight began. The general manager was not familiar with costs, so the auditor was called in. And he proved so useful that he became general manager.

The lesson is that the telephone business is not all circuits and service—you must study your various values.

Pure physical value is not enough upon which to base rates. How can any one base a rate upon the value of a railway or telephone company after the flood has passed by?

If state commissions are going to tie public utility corporations down too tight, some day they will find the state sued for the damage inflicted by a storm.

Suppose a state commission actually limits your value, and limits your depreciation. Are they not responsible when a great storm causes a loss which well night ruins the company?

Theoretically, the state should reimburse the companies for the loss due to the flood. Of course, this is possibly far fetched, but one can recover damages on certain causes and can resist confiscation.

That is what is meant when a company with limited income finds its property ruined.

I am proud of the part played by the telephone companies in the Ohio disaster.

People even escaped by walking across on cables, using wires above for support! Poles gave people refuge until boats found them.

All through the flood the telephone company gave communication between authorities.

Other towns were really hurt more than was Dayton. At least it is said that Hamilton and Barnesville suffered more. Yet Dayton got enough.

I think the great, bright spot in the whole disaster was the opportunity given to John Patterson, of the Cash Register Co. It was his work and thought that gave Dayton people not only safety, but food and shelter.

As soon as he heard of the rising water, he sent his wagons into the country and bought every provision they could.

It was his opportunity and he met it with a great heart—no one ever doubted his brain.

You probably know that he was convicted and sentenced to prison. Along with him were other members of the company.

Whether or not the court was prejudiced I can not say. But if Dayton allows this wonderful man to go to prison, I hope the next flood will follow with greater depth, and that the doors of the Cash Register Co. will be locked!

It is wonderful how quickly business came back to normal.

An old telephone man, Charles Kettering, vice-president of the Delco Co., went to Cincinnati, bought an automobile fire engine and ran it to Dayton himself. He pumped the water out of the basement, first using it to wash the mud out of the upper stories.

Think of it! A big company, surrounded and pounded by a record flood, only lost one actual week's time, and began deliveries in two weeks, suffering, too, $100,000 loss.

It's not human nature to cry over disaster. We are all familiar with the trials and tribulations of Job. But he had nothing on us, not even his fortitude and faith!

I have seen Kansas farmers laugh after a three-day hot wind had singed and utterly ruined their crops. They would have better luck next year!

But I am getting back to my point: Help to educate the controlling powers along your line of thought.

These men are not expert telephone men. They are only the judges between you and the public. They are just as much pledged to protect you as the public.

But the public has the advantage. It deals in generalities and comparisons and you in facts. The former are simpler and easier to handle. The latter are harder to understand, generally because the facts are not dressed in interesting garb.

It is easier to defend a citadel than it is to attack one. And in rate cases, defense should be dead easy.

The offending parties are on the outside, without facts and resting almost entirely on fancy. Really, there is no excuse for any telephone company having any trouble in justifying itself.

The National Independent Telephone Association has made its first real progressive step—in taking up with the Service association and appointing a committee on reproduction value.

For years I have tried to drill it into your minds, that you must look out for the rainy day. And I tried to find out just how much that should be and how to express it.

We see so many examples of "down and out" men. Why does it not apply to companies?

Of course, men usually go down and out by the bad habit route, drink or extravagance or lack of providence. Companies cannot drink, but they can be extravagant or they can be improvident. And their management suffers as well as the stockholders.

We have little or no patience with failure. A man might be forgiven one failure, but never two. Likewise a company.

Unless you know your costs, you are in a dangerous position.

Luckily the telephone industry has been so sound that it has carried us along in spite of ignorance and inexperience. But it is time now that every owner and manager should get busy and more clearly understand his business.

Do not depend upon your auditor or bookkeeper. Know it yourself. You should be able to value every lead of poles, wire and cables by a unit system. It is an interesting study.

I am a "crank" on the cost per station idea. If your average operating cost is $9 per station, and you put in an extension set for $6, make up your mind that you are losing actual money on it.

It may be that it individually pays, as far as the investment is concerned; but if your future business had nothing else to hope for beside six-dollar service, you had better look out.

If your average cost is $9 and your investment return is $6, and you are taking 1,200 telephones, you don't have to go far to see that you are losing money.

No telephone should earn less than $18 a year or 5 cents a day. Although if you keep above $15 you are in comfortable circumstances.

If the Bell company could raise rates on about a million telephones to where they belong, they could lower rates on about a million that are too high.

No one knows better than the Bell crowd themselves where their rates are high. And you and I know where they are low and below the average. Hence, they are compelled to charge high where they can to even up. It is but natural.

Don't you see that a commerce commission, when it finally gets to work, will help you as well as the Bell in such a way that some rates will be lowered voluntarily?

The moment that all cut-throat rates are eliminated or raised where they belong, then will about 90 per cent. of the public agitation against the telephone companies cease. We are really punished by a condition not of our own choice.

When you pay $4 for a pair of shoes, you are paying more than you would if the dealer did not have dead-beat customers.

That is why I believe in commissions. They will wipe out dead-beats first. And then they will compel the raising of low cut-throat rates.

Then you can lower your high-priced service just a little and everybody will be satisfied.

Whenever there is price cutting, be sure that someone is paying for it who does not deserve the treatment they get.

Everything is evened up in this world. Even the man who profits by the price-cutting, usually finds himself cheated, because there must be some equalization for him, too.

We are having that nationally—lowering tariff and adopting an income tax. The bills of the Government must be paid.

I like the new tariff adjustments. Why not live and let live? That is the new economic demand. We cannot escape it!

My train is still rattling and roaring toward the Atlantic, making up time lost in Ohio, and trying to keep from paying me a dollar back.

I wonder how much longer you will stand my rattle and roar. This is my 172nd consecutive issue. I believe I at least hold the long distance record. If I have given you a single comfortable and useful thought I am satisfied.

Remember that I want to quit before you class me with the gimlets. I dislike bores myself.

MORAL:—You may fire when ready, Gridley.

Quarterly Meeting of Western Pennsylvania Association

Convention Takes Action Looking to Changes in Proposed Pennsylvania Public Utility Law and Towards Interesting the U. S. Attorney-General in Alleged Violations of the Sherman Anti-Trust Law—Many Interesting and Timely Talks

The principal matters considered by the Western Pennsylvania Independent Telephone Association at its regular quarterly meeting, just held at Pittsburgh, were the organization of the new Eastern Pennsylvania Independent Telephone Association consummated at Harrisburg the day before; the appointment of a legislative committee with a view to securing certain changes in the proposed public utilities law in Pennsylvania; and the appointment of a representative of the association to act with a committee of the United Independent Telephone Association, at Washington, before the attorney-general of the United States with reference to alleged violations of the Sherman anti-trust law.

Another subject which received considerable attention was the completing of the organization of the New Long Distance Telephone Co., which, as announced in TELEPHONY some time ago, proposes to build trunk lines between the various larger terminals of the state. Word was received from J. G. Splane, general manager of the Pittsburg & Allegheny Telephone Co., that he is prepared to co-operate in every way with the movement. The committee having the matter in charge, therefore, will probably proceed rapidly from now on.

It was moved to redraft and send to President Wilson, at Washington, a memorial prepared several months ago, under the administration of President Taft, and presented to him, calling attention to the fact that a number of the United States Government offices in the Pittsburgh district have only the Bell telephones installed, excluding the Independents entirely, although the latter have a much larger number of stations in the districts than has the Bell.

During the first day's session, John W. Coffey, head of the Coffey System & Audit Co., Indianapolis, was asked to address the convention on accounting. Mr. Coffey dwelt briefly upon the necessity for some non-complicated accounting system, particularly in view of the extension of the control of telephone companies by commissions. Not only do a large number of state commissions now have jurisdiction over telephone companies, he pointed out, but the Interstate Commerce Commission has established a compulsory uniform accounting system for all telephone companies having gross annual earnings of $50,000 and over. Another system for the smaller companies is to be issued soon.

Mr. Coffey cited several instances from his actual experience showing how telephone companies have been handicapped by the lack of an adequate accounting system. His remarks were listened to with attention and were warmly applauded.

Frank L. Eldridge, manager of the Telephone Service Association, then addressed the delegates, reciting the origin of his association, its original intention to operate only in the central states, the subsequent conclusion, brought about by inquiry from all parts of the country, that the association should be unlimited in its field, and, in detail, the manner in which it proposed to operate and is operating. He stated that the book of operating rules first issued will be supplanted very shortly by a revised edition, much more comprehensive than the first, and one which embodies every necessity along this line, whether for large or small companies.

Much interest was manifested in Mr. Eldridge's talk, and a number of managers present expressed their belief in the advantages of such an association. The convention as a whole took no action regarding the question of membership. This will probably come up for discussion at the next quarterly meeting to be held in July.

The second day's session opened with a stereopticon talk by E. C. Lewis, of the Telephone Improvement Co., Chicago. Mr. Lewis showed upward of 75 slides on a screen placed in the assembly room. These slides presented in detail the mechanism of the Automanual system, as also pictures of the exchanges both before and after the installation of the Automanual equipment, and portraits of the heads of the companies which have adopted that system. Mr. Lewis accompanied the views with an entertaining

and instructive talk, and held his audience closely until the conclusion of the lecture.

He was followed by J. Walter Barnes, president of the Western Pennsylvania Association, who sketched vigorously and concisely the tremendous development accomplished in the telephone field since the advent of the Independents. This development, Mr. Barnes declared, was directly attributable to competition, both in the manufacture of apparatus and in the field of operation.

The committee on membership dues reported, suggesting the following scale for membership, which was unanimously adopted: 500 units or less, $4 per annum; 500 to 1,000 units, $6; 1,000 to 2,000, $8; 2,000 to 3,000, $12; 3,000 to 4,000, $14; for every 500 units in excess of 4,000, $1. One telephone instrument or mile of toll line constitutes a unit. The fee for manufacturers was fixed at $20, and all dues are to be payable quarterly.

The new Eastern Pennsylvania association, having adopted a resolution inviting all members of the Western to attend their meetings in an honorary capacity and without the right to vote, the Western association returned the compliment by adopting a similar resolution, making the members of the Eastern honorary members of the older body.

A vote of thanks to the Doubleday-Hill Electric Co. was unanimously approved for the entertainment which that corporation furnished a large number of the members of the association. The Doubleday-Hill company secured a block of seats for the "Passing Show of 1912," and played the host in a very effective manner.

After some discussion, the association voted to accept the invitation of W. H. Wilson, of Erie, Pa., to hold the convention in that city during the week of July 6. Mr. Wilson stated that the Jovians hold a rejuvenation during the same week, and that a very lively time may well be anticipated.

The following representatives of various manufacturers and dealers in telephone equipment and supplies were present at the meeting: John W. Coffey, Coffey System & Audit Co., Indianapolis; R. Davis, Philadelphia, of the Dean Electric Co., Elyria, Ohio; Chas. H. North, of the North Electric Co., Cleveland; E. C. Lewis, Chicago, and F. W. Middleton, Cleveland, of the Telephone Improvement Co., Chicago; Philip Hill, Brown Hill, W. D. Shaler and A. H. Alexander, Jr., of the Doubleday-Hill Electric Co., Pittsburgh; F. C. Redfield, Philadelphia, and D. W. Brown, Rochester, of the Stromberg-Carlson Telephone Mfg. Co.; J. W. Smith, of the Frick & Lindsey Co., Pittsburgh; C. N. Thompson, Philadelphia, of the Kellogg Switchboard & Supply Co., Chicago; B. L. Moore, of the Century Telephone Construction Co., Buffalo; A. J. Kohn, of the Cracraft-Leich Electric Co., Genoa; H. W. Wightman, of the Union Electric Co., Pittsburgh; E. E. Gauss, of the Robbins Electric Co., Pittsburgh, and H. H. McDowell, Pittsburgh, of the National Carbon Co., Cleveland.

The meeting was well attended and close attention was given to the various matters discussed.

United Association Directors Meet.

On Saturday afternoon, April 19, the directors of the United Independent Telephone Association met at Pittsburgh and appointed John H. Wright, of Jamestown, N. Y.; E. D. Schade, of Johnstown; J. G. Splane, of Pittsburgh; J. F. Stockwell, of Philadelphia; and B. G. Hubbell, of Buffalo, a committee to go to Washington to take up with the department of justice alleged violations of the Sherman anti-trust law by the Bell telephone company. J. Walter Barnes, of Fairmount, W. Va., is also a member of the committee, ex-officio, as president of that association and special representative of the Western Pennsylvania Independent Telephone Association.

A resolution was adopted touching on the death of C. E. Wilson, formerly general manager of the Keystone Telephone Co., Philadelphia. J. F. Stockwell, of the same company, was appointed on the executive committee to succeed Mr. Wilson.

It was voted to have the by-laws of the association printed and distributed among members, and the secretary was instructed to proceed to active measures looking to the acquisition of new members.

The board of directors will meet at Erie, Pa., during the week of July 6, at which time it is probable that the date will be fixed for the next convention of the United association. The place for holding the convention will probably be Chicago.

Johnstown Company Increases Rates.

Announcement has recently been made that the Johnstown Telephone Co., of Johnstown, Pa., will materially increase its rates in that city and vicinity, as a result of the standardizing of telephone rentals recommended by the state Railroad Commission. The flat rate for a business telephone, now $30, and in some instances $35, will be increased to $44 annually, and other increases will be made in proportion. A two-party business line will be increased from $24 or $30 to $33; a four-party business line from $24 to $30; a direct residence line from $24 or $30 to $33; a two-party residence line from $18 or $24 to $25; and a four-party residence line from $18 to $22.

Some More Flood Heroines.

Two telephone girls of Wellsburg, W. Va., are accorded the honor roll of heroines during the recent flood. Miss Alice Rorah, chief operator of the Wellsburg Home Telephone Co., and her assistant, Miss Mae Dummer, were at the switchboard for 96 hours. The young ladies went to work on a Wednesday evening as the waters were rising, and were assisted from the telephone office, exhausted, on the following Sunday evening, having been on duty four days, with 24 working hours to each day.

The building in which the girls were working was surrounded by nine feet of water and other operators were unable to relieve them. The girls suffered considerable hardship on account of the gas supply giving out, leaving them without fire until Friday afternoon.

The services rendered by these operators were invaluable and possibly saved many lives.

Will Remain Independent.

The sale of the interests in the Commercial Union Telephone Co., Ridgeway, Pa., formerly owned by the American Union Telephone Co., made under orders of the United States District Court, at Harrisburg, on February 4, has been confirmed by the court and possession of the property has been taken by the purchasers, who are largely interested in the Independent telephone business in Pennsylvania.

G. W. Herrick, local manager, in an interview published in the Ridgeway Daily Record, stated that he was highly gratified that the ownership of the local company, which was organized to give service independent of the Bell company, had returned to the hands of those who were only interested in improving the service and extending the scope of the company's operations. The connection of the purchasers with other Independent companies will be of benefit to the company and will insure the company's remaining in the Independent fold. The management is deep in plans for the improvement of the services and solicits the support of the local public.

A Quartet of Men Prominent in the Telephone Field

DAVID E. CATES, owner and manager of the Marble Rock Telephone Co., Marble Rock, Iowa, first entered the telephone field in 1901, when he was employed as lineman by the Shell Rock Valley Telephone Co., at Rockford, Iowa. On May 1, 1906, he resigned and went with the Corn Belt Telephone Co., of Waterloo, Iowa. On September 24, 1906, he purchased the Marble Rock Telephone Company's system, at Marble Rock, Iowa, which he has since operated and to the management of which he gives his entire time. When he bought the Marble Rock company, there were but 230 subscribers connected with the exchange. Today there are 335. Mr. Cates was born on a farm near Marble Rock July 17, 1878, and was educated in the schools of that town. He followed the profession of farmer until he was twenty-one years of age. He was a fireman for two years with the Chicago, Rock Island & Pacific Railway. Mr. Cates is a member of the Knights of Pythias order, as well as a member of a number of other orders and societies.

JOHN L. PUTNAM, with Kennett, Cowan & Co., bankers, with offices in the Corn Exchange Bank Building, Chicago, was born at Houlton, Maine, June 17, 1874. He attended the English High School, Boston, as well as the Boston Institute of Technology, graduating in the class of '96 with the degree of Bachelor of Science. He entered the employ of the American Bell Telephone company in 1896, being located at Chicago. In 1899 he became interested in the manufacture of telephone apparatus with the Clark Automatic Telephone Manufacturing Co., of Providence, R. I., remaining with this company as its general manager from 1899 until 1904, after which date he entered the employ of the Central Union Telephone Co., with headquarters at South Bend, Ind. His work took him over a great part of northern Indiana, but his principal occupation was the management of the Central Union Telephone Co.'s exchange at South Bend. He is a member of a number of clubs at South Bend and since removing to Chicago has joined a number of clubs in the windy city.

BURT B. CLARK, president of the American Telephone Fire Alarm Co., with general offices at 10 S. La Salle St., Chicago, was born at Rockford, Ill., in May, 1868. He has been in the optical business for more than 25 years, and is the president of the Clark & Bestor Optical Co., and the Klotorik Optical Co., of Rochester, New York. For seven years he has been actively identified with developing a practical telephone fire alarm system. The American Telephone Fire Alarm Co. is the successor to the Denio General Electric Co., which Mr. Clark formed for the purpose of developing fire alarm apparatus. He is ex-president of the Denio General Electric Co., National Optical Association, New York State Optical Society, and the Rochester Optical Society. He is a member of the Masonic club, vice-chairman of the Fire Prevention committee of the Rochester Chamber of Commerce. He is a member of the Masonic fraternity as well as a number of the Rochester clubs. While being now located in Chicago, he still makes Rochester his home.

FRANK R. FALKENSTEIN, assistant superintendent of the Petroleum Telephone Co., Titusville, Pa., was born at Baltimore, Md., Dec. 31, 1879. He received his education in the public schools of Baltimore and his first position was with a manufacturer of straw hats in the Maryland city where he spent several years. He entered the employ of the Chesapeake & Potomac Telephone Co., as operator in 1898. When the Home Telephone & Telegraph Co. was organized he accepted a position with that company in 1900 as assistant installer, and later accepted a position as installer with the Maryland Telephone & Telegraph Co., successor to the Home Telephone & Telegraph Co. He was promoted to the position of wire chief. In 1901 he became wire chief of the Petroleum Telephone Co., Titusville, Pa., and is now assistant superintendent of the company. The Petroleum company has its headquarters at Oil City, Pa., with exchanges at Franklin, Pleasantville, Cooperstown, Clintonville, Oil City and Petroleum. Mr. Falkenstein looks after the company's interests at Petroleum.

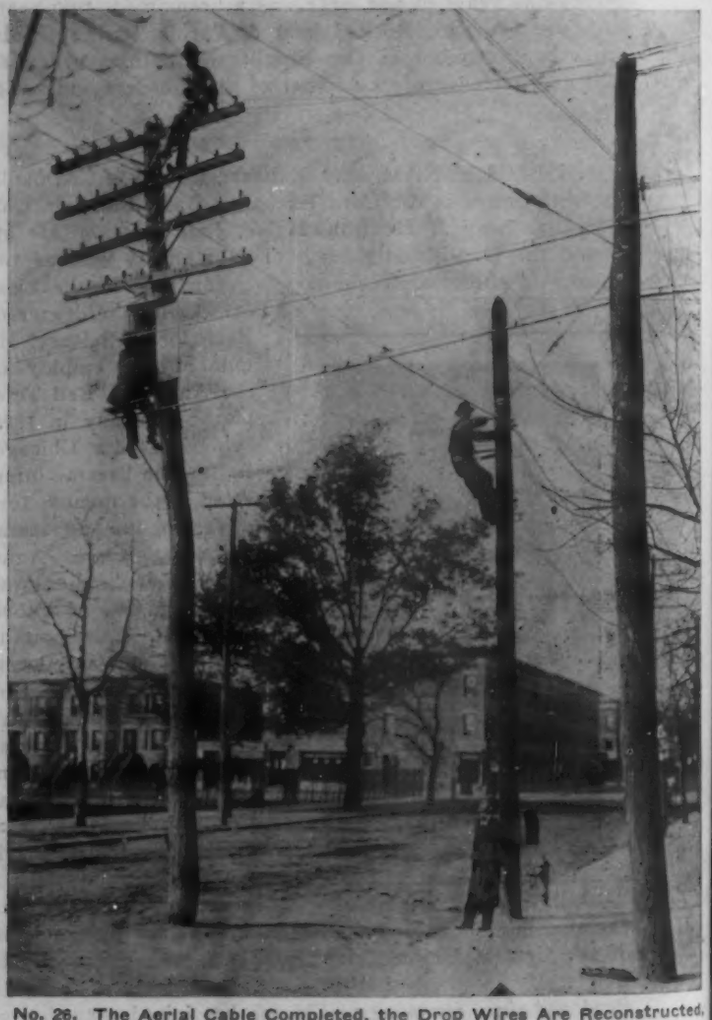
"The Plant Man on the Job"—A Day Spent With the Plan

No. 22. Making Final Balance Test on a 600-pr. No. 22 gage Duplex Cable—Scene Above Ground.

No. 23. A Scene Below Ground—A Rapidly Growing Area, Four Miles from a Central Office and Within Which the Establishment of a Central Office was Scheduled in About Three Years, Required Additional Facilities—A 600-pr., No. 22 gage Duplex Cable Was Run at This Time, Spliced and Stubbed as a 600-pr.—Until New Office is Opened, Each Pair of a Quad Will be Used as the Side of a Circuit—This Cable Will be Cut at the Boundary When the New Office is Opened, Giving a 600-pr. Cable Out of Each Office and Utilizing the Subway Duct to Its Full Capacity. This is but One Instance Where the "Plant Man" Looks Ahead into the Future and fits the Installation to the Predicted Requirements of the Future.

No. 24. Trouble in a 600-pr., No. 22 gage Cable Laid in Creosoted Wood Duct Temporarily Under a Railroad During Grade Crossing Elimination Work—The Railroad Gang in Excavating Uncovered the Duct and Started to Saw Through it.

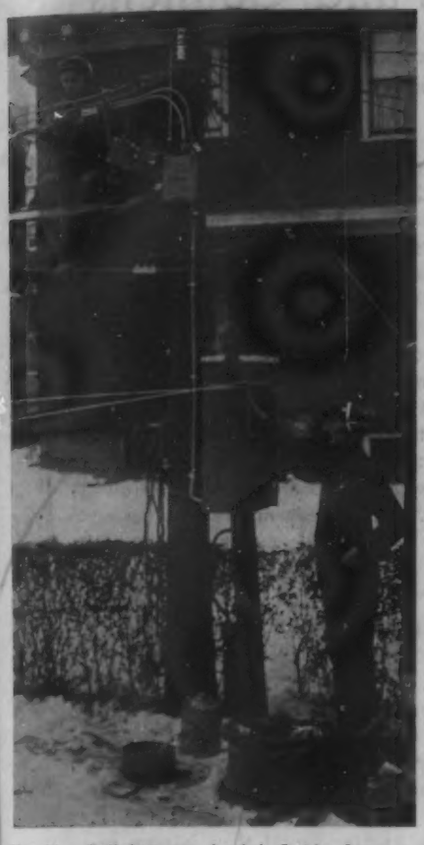
No. 25. A Job That is Interesting Because of its Comparative Rarity—A 300-pr. Stub Changed from One Set of Conductors to Another in a 600-pr. Cable—It Was Necessary to Keep the Splice Soft by Means of a Hot Air Blower, While Doing the Work, to Avoid Damage to the Insulation.



No. 26. The Aerial Cable Completed, the Drop Wires Are Reconstructed, and the Old Open Wire Lines Are Removed.

These photographs, which are here shown through the courtesy

Department on Long Island, Told in Instalments by the Camera



No. 16. Splicing an Aerial Cable from a Hanging Platform.

No. 17. Splicing Aerial Cable Using a Ladder Supported from Messenger Strand.

No. 18. Building Up a House Cable, Riser, and Branches Preparatory to Placing in Position.

No. 19. Branches Spliced into Riser Ready for Placing in Position in Building.

No. 20. Pulling Riser and Branches in Elevator Shaft.

No. 21. Riser Placed and Clamped into Position, Showing Branches to be Run to Terminals on Various Floors.

Review, will be continued in subsequent issues of this paper.

Proceedings Before Commissions, Courts and Councils

Discussions and Rulings of State Bodies Having Supervision of Telephone Companies, Decisions of Courts in Matters Affecting Public Relations of Utilities, and Actions of City Councils Bearing Upon Franchises, Rates and Service

Chicago Council Committee Takes Up Rate Ordinance.

Although it was expected that there would be some delay in the work of passing on the proposed new telephone rate ordinance in Chicago, due to the recent addition of four new members to the council committee on gas, oil and electric light, the present indications are that the matter will be disposed of before the summer vacations. One of the new members said he had been studying the matter for three or four years and did not need time to investigate the data.

The first section describing the general agreement between the city and the Chicago Telephone Co. has already been adopted and the first paragraph of the second section covering the maximum rates as recommended by E. W. Bemis, the city's expert, has been tentatively approved. This section as it stands fixes the rate for single party measured service at $48 a year, which entitles the subscriber to 960 calls. Other rates are now being taken up by the committee.

One of the clauses of the ordinance under consideration provides that the city electrician shall examine the grounds on which any reasonable complaints regarding service are based and take such action as may be necessary to correct abuses and bring about the enforcement of the service conditions of the ordinance.

Municipal Ownership Bill Before Illinois Legislature.

One of Governor Dunne's administration measures which specifically affects telephone companies is that introduced as Piercy's Senate Bill No. 430 and Clyne's House Bill No. 506 under the title of "an act to authorize cities to acquire, construct, own and to lease or operate public utilities and to provide the means therefor." This bill provides that after an ordinance has been passed by a city council and approved by a majority of the voters any utility, including telephone systems, can be constructed or acquired and can be operated by the city or leased to a corporation for a period of not more than twenty years. The property can be acquired by agreement with the utility company or by condemnation by due process of law.

In any grant to a company the city reserves a stated right to take over all or any part of the property, plant or equipment at any time as provided in the grant. In case the city does not care to exercise this option it can grant to another company the right to occupy the field occupied by the first grantee and the second company shall have the right to take over the property in that field under the same terms by which it would be taken over by the city. Bonds may be issued for the purchase or construction of plants. Charges must be high enough to meet all operating and maintenance expenses and to meet interest charges on bonds and to create a sinking fund for meeting the bonds at maturity.

Telephone Bill Has Passed Nebraska Legislature.

After a rather lively battle both the senate and house of the Nebraska legislature have passed a bill providing for the county ownership of telephone systems and the bill has been signed by Governor Morehead. The bill, as originally introduced in the house by Representative Fuller provided that a county before engaging in the telephone business should make a reasonable effort to purchase plants already existing.

In this form the bill was recommended from the senate committee on miscellaneous corporations, but in the committee of the whole an amendment urged by telephone interests was adopted which provided for the appointment of appraisers to arrive at the value of the property and for a submission of the report of these appraisers to a vote of the people. In selecting the appraisers the county was to name one and the telephone company one and the two men thus named were to select a third.

The bill in this form passed the senate and was sent back to the house; but the house refusing to concur, a conference committee of the two bodies was appointed. The bill was further amended to provide that in the event the report of the appraisers was rejected by a majority vote of the people, the county could then go ahead with the construction of its own system without further delay. In this form the bill passed both houses and became law upon receiving the governor's signature.

Commission Investigating Service in Lincoln, Neb.

In connection with an application by the Lincoln Telephone & Telegraph Co. of Lincoln, Neb., for permission to raise its rates the state railroad commission recently began an investigation of the company's service. Ten young men were started out over the city to spend a week using telephones and finding out exactly the kind of service the company is giving its patrons. The commission some time ago indicated that the company was entitled to a greater rental than it now receives, but it was also pointed out that an order to raise rates would not be given until it was determined definitely that the service was satisfactory.

The investigation was started suddenly and without warning. Each investigator was given the numbers and locations of the telephones which he was to try out. He was instructed to go to each residence or office and ask permission to use the telephone and was informed as to what number he should call up. He was required to make three efforts to get his party over the telephone and if this failed, was instructed to call "trouble" and ask if the line was clear. Each investigator was required to keep a record of the exact time at which he tried to get the number and then to go immediately to the house from which no answer was received and learn if there was any one there when the call was made. By this means it is expected to find out the percentage of efficient service.

In order to make certain that the field investigators were making accurate reports the commissioners' engineers arranged to check up the work by calling some of the numbers which were tested and finding out from the patron what the report of the investigator was. The work of the investigators was arranged to cover hundreds of telephones in residences and places of business.

Rate Reductions Ordered in New York.

A reduction in telephone rates from subscribers' stations within the so-called exchange area of Forest Hills, in the Borough of Queens to principal points in the Borough of Manhattan from 10 cents to 5 cents, has been ordered by the Public Service Commission of New York, Second District. The new rate must be put into effect on or before June 1, 1913. The order was made following the complaint of Forest Hills Taxpayers' Association of Elmhurst.

The Public Service Commission, Second District, has also ordered the Granville Telephone Co. to restore on or before May 15, 1913, the limits of the exchange area, includ-

ing Shushan, to the status existing prior to October 1, 1912, and to cease from making any toll charge for messages between its subscribers located in Salem, N. Y., and other points in the former exchange area in the state of New York. On October 1, 1912, the company established a new schedule of rates whereby the subscribers of its Salem exchange are required to pay certain increases in rentals for local service and at the same time the company changed the Salem exchange area by excluding the Shushan, N. Y., and Rupert, Vt., exchanges and introduced a toll charge of 5 cents per message between its subscribers located in Shushan, N. Y., and Rupert, Vt.

Telephone Rates at Albany, N. Y., to be Reduced.

As the result of conferences held between Peter D. Kiernan, president of the Chamber of Commerce, of Albany, N. Y., and Frank H. Bethel, vice-president of the New York Telephone Co., Albany is to have a reduction in telephone rates, beginning June 1. The subject of rates in Albany has been a matter of controversy for over two years and the complaint now before the New York Public Service Commission, Second District, will be withdrawn upon the introduction of the new rates. The following table shows the yearly rates to go into effect on June 1, the present rate, and the rate which prevailed before November 1, 1912, when a reduction was made at a hearing before the commission:

	New rate	Present rate	Old rate
Single, business	$60	$72	$90
Single, residence	36	42	48
Two-party, business	48	60	66
Two-party, residence	30	30	36
Four-party, residence	24	24	24

Besides the foregoing schedule Vice-president Bethel arranged for a direct business line telephone service for $36 a year, not to exceed 600 calls. The New York Telephone Co. will endeavor to establish a message rate system in the important cities of the state.

It is not likely that the consolidation of the New York Telephone Co. and the Albany Home Telephone Co. will take place for a year or more. It was announced several months ago that the consolidation would take place on May 15, but the New York Telephone Co. has recently purchased two buildings at State and Park streets upon the sites of which a new central office will be erected. This has necessitated changes in plans of the New York Telephone Co.

Appeal Granted in Rate Case.

An order of appeal to the supreme court of the United States in the case of the city of Louisville, Ky., against the Cumberland Telephone & Telegraph Co., has been granted in the federal court recently. It is expected, provided the telephone company makes no attempt to delay matters, that the appeal will be heard by the latter part of May.

The Telephone Situation in Louisville, Ky.

The Home Telephone Co., of Louisville, Ky., has applied to the city council for permission to extend its party line service to some 2,000 new subscribers who desire that service.

The company's franchise dates back to 1900 when it entered into an agreement with the city not to put in party lines, as they were objectionable in many ways. In 1909, however, when party line equipment had been improved to such an extent that it was practically as satisfactory to subscribers as the main line installations, the company began to install the party line service at $48 per year, which was $12 cheaper than the legal maximum fixed in the company's franchise. The city, however, took the position that the company could not be permitted to abrogate any part of its contract with the city and in this position the city has been upheld by the court of appeals, which decided that the Home Telephone Co. could not continue to operate party lines unless it received a permit from the city. This decision was rendered when the company had 4,000 party line subscribers out of a total of about 16,000. The company now also has a waiting list of 2,000 who desire party line service. The only influence hostile to the granting of the permit to maintain and install party line service, which the company now seeks, is declared to come from the Cumberland Telephone Co., which has itself authority to use party line service and whose charges for that service are $6 more than the Home Company's party line rates.

Kansas Subscribers to Appeal to Interstate Commission.

A committee of telephone subscribers of Englewood, Kan., believes that a recent increase in telephone rates between Kansas City, Mo., and Fairmount Park, Englewood and Independence, Kan., affords an opportunity to appeal to the Interstate Commerce Commission on the ground of discrimination in interstate charges, C. C. Madison, an attorney representing the subscribers in question, is quoted as follows:

"Argentine, Kans., is the same distance from Kansas City, Mo., as Fairmount Park, Englewood and Independence. But Argentine can call Kansas City free; we cannot. That plainly is discrimination, and since it has to do with interstate traffic we believe the Interstate Commerce Commission has power to suspend the rate advances. Anyhow, we have determined to file a case before them. If we are unsuccessful there we will make our fight before the utilities commission of Missouri."

Ashland, Ohio, Company Authorized to Distribute Stock.

The Public Service Commission of Ohio has authorized the Star Telephone Co., of Ashland, Ohio, to issue $67,500 of capital stock, of which amount $17,500 will be sold for the highest price obtainable above par, the proceeds to be deposited in the treasury of the company as a depreciation fund. This fund will be expended for a new switchboard at Ashland and for making additions and extensions to the property. Under the commission's order the remaining $50,000 of stock is to be distributed pro rata to the holders of the present outstanding capital stock in the form of a stock dividend in lieu of surplus earnings which might otherwise have been distributed as dividends but which were expended in the construction of additions and extensions to the plant and property.

Proposed Municipal Operation at Columbus, Ohio.

The city council of Columbus, Ohio, has under consideration a resolution authorizing notification to be given the Columbus Citizens' Telephone Co. of the intention of the city to take over the plant of that company for municipal operation. The franchise of the company gives the city the privilege of buying in the property at the expiration of 15 years, providing one year's notice of this intention is given. The 15-year period expires one year from next June.

Final action on this resolution, however, was delayed pending an opinion by City Solicitor Bolin as to whether the city would be legally bound to complete the deal if it should give such notice. In the opinion of the city solicitor "the notice simply reserves the right of the city to purchase if it cares to do so at the expiration of the 15 years." Service Director Kinnear has been asked by the council for an estimate of the cost of taking over the property.

The Telephone Inspector and the Troubleman

Continuation of a Series of Articles Begun in the September 7 Issue of Telephony—They Deal in an Elementary and Explicit Manner With Many of the Problems Encountered by Telephone Men in the Operation of Small Exchanges

By A. E. Dobbs

"Not many switchboards nowadays have 1,000-ohm line drops, do they?" asked Will who wanted to head George off before he got too theoretical.

"No, the line drops are usually of 500 ohms resistance," answered George, "and now some manufacturers favor drops having windings, as low as 240 ohms. The clearing out drops though are sometimes as high as 1,000 ohms, especially on toll lines."

"With the latter type boards, how are the 'hang-up' and 'ring-through' troubles prevented?" asked Will.

"There are several methods," replied George, "that are used. Usually a repeating coil is placed in the cord circuit, and a condenser is inserted in series with each winding, the connection being made at the center. A clearing out drop or signal is also connected across the same points. Sometimes a double wound drop is used for the purpose and then again two separate drops are installed. The latter plan of course tells the operator exactly which subscriber is signaling. Here, this sketch (Fig. 61-*A*) shows the idea. The type repeating coil used does not allow the ringing current to pass across it while the voice currents are readily transformed with no appreciable loss. The condensers connected between the inside terminals of the coil permit but little of the low frequency ringing current to pass so that it is forced through the windings of the clearing out drop. On long lines the drops are bridged directly across the lines but on short ones they are placed between the windings of the repeating coil in multiple with the condenser.

"Another plan is simply to insert condensers, in series with the cord circuit, one in each conductor, like this (Fig. 61-*B*). Then a double wound drop or two separate drops can be connected on each side of the condensers. This gives a "non-hang-up" circuit, as the subscribers can ring down the clearing signal under all conditions. One subscriber may tinkle the bell of the other subscriber in ringing off so that it is not an absolute non-ring through circuit. But it answers the purpose very well and is more efficient in transmission than when a repeating coil and condensers are used."

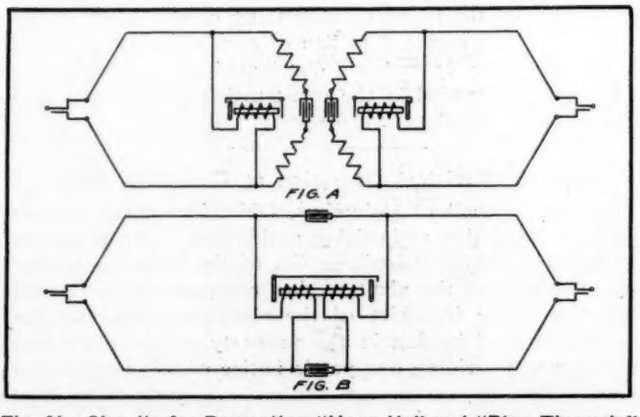


Fig. 61. Circuits for Preventing "Hang Up" and "Ring Through."

George Discusses More Theory.

"I say, William Harrison Butler," called out George a few mornings later. "Here's a new one for you. This time the man sends us a real problem."

"Pass it along," retorted Will, "and let us see what it is made of."

"Well,'" responded George, coming over to Will, "in this sketch (Fig. 62), *A* is the drop; *B* is an instrument of 1,000 ohms resistance, placed at the end of a country toll line; *C*, C_1, C_2, C_3, and C_4, are five bells of 200 ohms each, placed in series, making a total resistance of 1,000 ohms in the circuit which is bridged on the line."

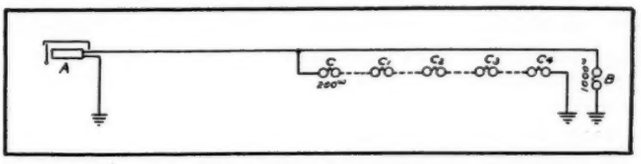


Fig. 62. Conditions of the Divided Circuit Problem.

"Why, it seems to me that would work all right," Will gave as his opinion after glancing at the drawing.

"Yes, it will work," rejoined George, "but how? There are a few things to be taken into consideration, in connection with this plan, that it will not do to entirely overlook.

"Manufacturers of some low resistance ringers have a trick of opposing the self induction of the magnet cores by introducing a method of winding which produces a condenser effect, thus opposing the self induction with static induction. As the two always work in opposite directions, they neutralize each other to a great extent. It is due to this that we are sometimes surprised at being able to talk through a large number of ringers in series."

"Say," broke in Will, "what is the difference between the static induction and the self induction that you are so continually talking about?"

"Go easy," replied George. "Let us get through with what we have on hand first."

"Now," he continued, "suppose we buy ringers that are wound in this manner. It is plain that the five ringers then would not have as much inductive resistance as the 1,000-ohm ringer."

"Hold on," interjected Will. "Are you sure you are right there? You once told me that the inductive effect depended largely on the length of the core. Now in these five in series you have nearly five times the length of the core."

"That would be right," George returned, "if the cores were all in one piece, but they are not. On the contrary, these five pairs of cores are placed more than a mile apart.

"Now," he went on, "if, therefore, these magnets happen to be made in this manner, and the line between *A* and *B* is a long one of high resistance, they might partially ground the 1,000-ohm ringers, and might quite materially weaken the voice current from station *B*. If, on the other hand, the tin foil or extra winding is left off the 200-ohm ringers, then the inductive resistance of the 200-ohm magnet becomes of full effect, and voice currents anywhere in the series will be correspondingly weak. Then there is the ringing current to be considered. If they have current of sufficient volume and voltage at the exchange to ring all these six bells at the same time, would the generator at *B* ring past the series circuit and throw the drop at *A*? Or if it did so, would the generators at stations *C*, C_1, C_2, C_3, and C_4, have current

enough to divide itself between *A* and *B* and still throw the drop?"

As Will looked at the diagram, it occurred to him that there might be a chance for improvement.

"Is there no way to cut those ringers out when any of those series telephones are in use?" he questioned of George. "It seems to me that you could invent some kind of a stepping

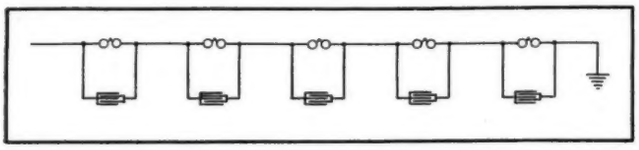


Fig. 63. Condensers Bridged Around Bells to Facilitate Talking.

wheel which would throw a short circuit around the coils when a subscriber is talking."

"Yes, such systems have been invented" was the answer, "and nearly all that are worth anything, are patented. A simpler way would be to insert a small condenser in the ringer loop like this," making a sketch. "As the impulses from the generator are comparatively slow, they will not pass through the condensers (Fig. 63) to any great extent, while the voice currents will. Consequently a party line of this kind will talk almost as well as a single wire."

"If you want to experiment with this you can get some tin foil at the tobacco store, or lead foil out of tea chests. Cut the foil into strips about eight inches square, using about 15 sheets for each side placing two sheets of thin, dry wrapping paper between them. Connect all in the proper way, and place them, sheets and all, between two thin boards, and screw the boards together at the corners."

"But say, what are you speculating about it for, anyway? Why don't you connect it up and try it?" asked Will, who had now become thoroughly tangled up in the problems which George had presented.

"This reminds me," George began reminiscently, "of another experience which was told me by a telephone manufacturer. It rather knocked all my previous theories in the head and I do not know to this day whether he was really telling the whole truth or not. The case was this: A telegraph line extended through a crowded city for 11 miles. It had been cut out and disconnected, because the wire was so rusty and its resistance so great that it was not practicable to use it longer as a telegraph line. Now, the telegraph superintendent had nine loops on this circuit that had been discontinued. The nine loops, as I said, extended over 11 miles, and he concluded that the wire, which was of no earthly use for telegraph work, would make a good grounded telephone circuit.

"So he proceeded to order nine telephones from this manufacturer, who, trying to favor the conditions all he could, turned out the very best instruments possible. The coils were wound as low as 80 ohms, using short magnets and special winding to make the inductive resistance as low as possible. As the telegraph superintendent could not induce the company to run another wire, so as to make a complete circuit, he grounded the line at both ends. As would naturally be expected from working alongside of quadruplex circuits, electric light wires, over trolleys, in noisy rooms, and in every other old disturbance you can think of, the circuit was so noisy that to use the telephones was well nigh impossible. Then the question as to what to do with the circuit came up. It was plain that the telephones could not be used in their present condition.

"The telegraph superintendent, however, had a theory of his own. He instructed the manufacturer to wind the ringer coils to 300 ohms each, probably with the idea of balancing the induction from his 300-ohm relays. The manufacturer protested that as service was all but impossible over the 80-ohm ringers, the 300-ohm ringers would surely make it altogether so. But the superintendent said he would like to try it, and said he would take all the responsibility of the experiment. The manufacturer then of course did as requested and changed the coils. He told me that the first report he received was satisfactory and heard nothing from it after that."

Although George never mentioned the matter again, Will got the idea that his friend bridged the ringers with condensers.

(To be continued.)

Telephone Aids Weather Bureau.

Until recently most of the Arizona towns have been practically without reports on the weather conditions. When Robert R. Briggs took charge of the weather bureau at Tucson, he started at once to establish some way of reporting the forecasts. He made arrangements with the telephone company operating in the different towns and cities to receive the weather reports every morning. They will thus be accessible to thousands of telephone subscribers, newspapers, etc.

In some places arrangements are being made for the use of the card system of weather forecasts. Thirty-one towns are now in line for these reports by telephone. Mr. Briggs' scheme has the entire sanction of the weather bureau at Washington, and the telephone reports of the weather conditions throughout the state from the different weather stations are being welcomed by the people.

Illinois T. & T. Co. Consolidates Departments.

Announcement has been made that the commercial and traffic, or service, departments of the Illinois Telephone & Telegraph Co., Chicago, have been consolidated, under one head. For about a year the service department has been making special efforts to raise the standard of service furnished by the company, and now has it in an especially satisfactory condition. With the service in this condition, it was deemed best to consolidate with the commercial department, thus bringing

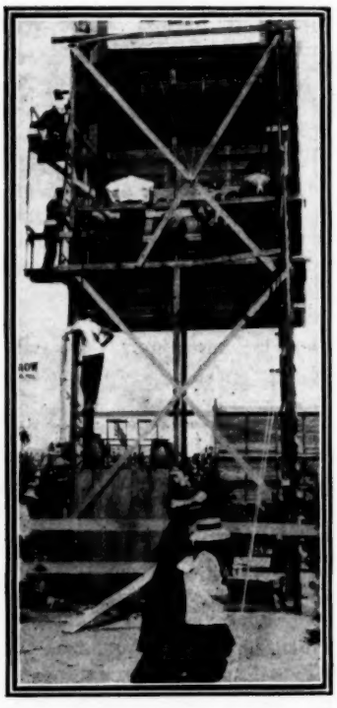
Harold D. Stroud.

the two departments, whose work is closely connected, under one head.

Harold D. Stroud, who has been at the head of the traffic department, has been placed in charge. The new commercial superintendent is well known to telephone men and his experience well qualifies him to head the consolidated departments. He has made a close study of telephone economics and given much consideration to rate questions.

A Telephone Scoreboard.

A unique telephone system installed and used in connection with a giant scoreboard in the Santa Monica, Cal., automobile races for the last two years, has been declared a splendid success by officials and all spectators of the races.



Operating Score Board.

In order to operate this system the Automobile Emergency Service Co. made arrangements with the telephone company to string three telephone circuits around the eight-mile course; one to connect with the scoreboard; one with the private branch exchange under the judges' stand communicating with the judges, the committee, press box and pits; and the third circuit with the emergency hospital.

Telephone stations were installed at half-mile points around the full length of the track and the operators reported constantly over the different wires. If an accident occurred the emergency hospital could be informed and, as the different stations were designated, the ambulance could be hurried to the exact location on the course without confusion or delay.

The operation of the scoreboard was one of the interesting features of the races and caused almost as much excitement as if the cars were continually in sight.

This large signboard was placed opposite the grand stand. Each car was represented by its number on a square which was moved forward on the board from space to space, indicating the number of miles covered, as the car sped around the course. Thus the spectators could see at a glance the position of each racer; knew just the car which was in the lead; and also the one that coming into view far down the track in a cloud of smoke and dust, and which could not otherwise be identified. At the right side of the board was a separate column in which the number of laps was recorded for each car.

To manipulate this system eight men stood behind this large sign with telephone receivers on their heads. They were kept busy in response to messages from the different stations, shifting the squares as one car after another speeded forward. When two numbers kept pace on the board, the spectators in the grand stand were as loud in their shouting as if the cars were actually racing by in front of them.

When a car dropped out of the contest for some reason or other, this fact also was indicated on the scoreboard and the cause reported by the operator of the station nearest it direct to the judges, who then announced it to the people. This telephone system was also used by many of the drivers to communicate with their own pit, so that if extra tires or other attentions were needed all could be in readiness for them when they arrived.

This ingenious device for keeping in touch with the cars as they journeyed around the track is a western invention. Having been proven a success, it is a permanent feature of the road races at Santa Monica and will probably be adopted all over the country.

The Valuation of Public Utility Properties.

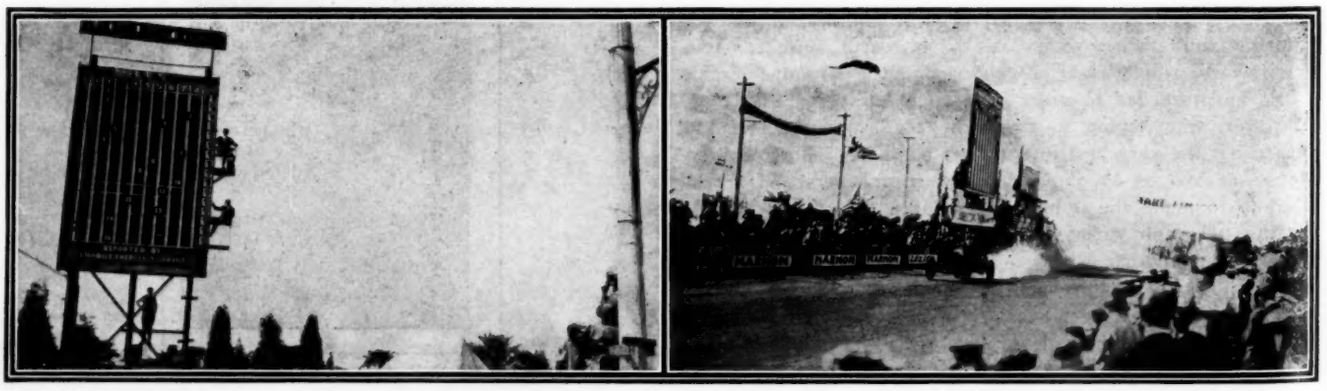
In the course of an address delivered before the Associated Engineering Societies of St. Louis, on the subject of "Central Station Statistics and Accounting," Herman Spoehrer, secretary and treasurer of the Union Electric Light & Power Co., made some interesting observations on the broader aspects of his subject. He pointed out that in the valuation of public utility properties, allowance must be made for intangible property as well as for tangible property.

In some places an allowance is made for franchise value, and in addition the going value is to be taken into account. The relation of the going value to the value of the physical property varies. Cases were mentioned where the value of the intangible property has been fixed at from 6.5 to 20 per cent. of the value of the physical property. Under the heading of "intangible property" may be mentioned the item of "superseded property." Investment in "superseded property," where the expenditure was prudently made at the time but has been wiped out by some sudden change in the art, should not be charged against current earnings.

Mr. Spoehrer also described the various methods employed in determining "value" and discussed in an illuminating manner the cost-of-reproduction theory and other considerations to be taken into account in the study of this complicated subject.

The so-called "accrued depreciation" is based upon the expiration of a portion of the life of property which is not yet ready for replacement but which must be replaced when withdrawn from service in future. The presence of such "accrued depreciation" does not mean that the property is not maintained at 100 per cent. service value.

The fallacy of deducting "accrued depreciation" from the replacement cost to arrive at the value of the property for rate making purposes was explained at some length



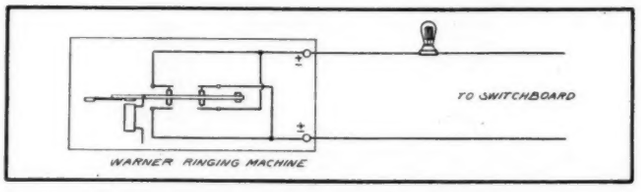
Giant Score Board Which Shows Position of Automobiles Every Half-Mile—Information is Telephoned to Board Operators.

Practical Subjects—Letters and Discussions

Helping the Ringing Machine.

During windy weather, we, as well as other companies, have a good many shorts come in on our lines.

The other night I connected a 110-volt tungsten lamp in a series with our Warner ringing machine, and placed the lamp on the board. Now when a short blows in and the operator



Ringing Circuit with Lamp Included.

rings on that line, the electric light will come up quite bright, showing the operator that the line is short. If a receiver comes off the hook while the operator is ringing the lamp will light up. This is probably an old idea, but it is new to me and a good one.

New York. TELEPHONY READER.

Too Good to Throw Away.

One of TELEPHONY's readers, C. W. Kugelman, 1916 Grandview Avenue, Portsmouth, Ohio, writes us as follows:

"For some time I cut out the best parts of TELEPHONY and made a valuable scrap book, which I have indexed and find very useful as a reference book. But, of late, it is so hard to tell which is the best part that, last September, I decided to file away each copy and keep the whole paper.

"I have made an index in a note book, so that I can refer to it and find the copy of TELEPHONY which may contain the information wanted. The index is made in the following manner:

Topic	Vol. No.	Page
Atlantic Cable	64—2	43
Batteries, dry, selecting.....	64—3	29
Cable Testing	64—5	31

This is much the same manner as TELEPHONY builds up its own index, but the individual keeping such a record will adapt it to his particular needs. The plan is an excellent one and TELEPHONY commends it to every subscriber.

Letters from a Retired Lineman to His Nephew.

Podunk Valley Farm.

Dear Ben:

Your letter from New York reached us, also the post cards for the kiddies. I don't know as I know enough about large cities to realize just how large New York is. Some of the boys used to take a run down that way occasionally and from their reports, it is a fine place to get rid of money if a fellow is on his own expense. Anyway those who went from our bunch reported a grand time and incidentally began borrowing two bits here and there as soon as they got back to work, to carry them 'til pay day.

I never became prominent enough in the service to be sent around at the company's expense, except with the gang, and never had any desire to spend what little money I saved, for an extended trip even to so important a place as New York. Your case, of course, if different. I hope you made a good impression, one that will back up the general foreman's recommendation.

You say the pole problem received the most careful consideration. I guess it is one in which the construction engineers are the most interested.

None of the ideas you mentioned of are new to me or to any old lineman who gave any attention to the details of line building. As for dropping weak poles, where clearance will permit, resetting I believe you call it—will say that it was being done to some extent in my day, but only in places where new poles could not be procured at a reasonable cost. In most cases the work was done without untying the wires, and with little effort to prevent a jar when the pole was pushed off the bank into the hole. If it struck the bottom of the hole, all well and good; if not, enough linemen would climb on and weigh it down until sufficient dirt was filled in to hold it. This, of course, left an upward strain on the wires which is as bad as any other kind of strain.

Come to think of it, our gang did cover about a 100 miles of line resetting poles the last fall I worked, because the replacement work could not be done before winter. We began by over-doing, dropping six or eight to the mile for the first five or six miles. We started in without any particular instructions and, of course, tried out all the wrong ways first.

When the corner pins began to snap, we knew we had taken up too much slack. We went back and cut in slack, finding it necessary to retie most of the wires at the poles we dropped. Then we started again, cutting in slack at every second pole we reset. The result was, we overdid it to the other extreme. If I remember correctly, we then began untying the wires on the poles we reset and before cutting in slack untied several poles each way on such wires as were difficult to retie on the lowered pole.

We also learned to lower the poles carefully, first by using pikes and digging bars as spears. Pikes were not so bad but the digging bars really damaged the pole. I want to warn you here to see to it that holes are not made in poles near the ground line with cant hooks, peevies, bars, etc. It only hurries the rotting process by giving it a foothold. I think it is also an accepted fact that a coat of creosote or good preservative paint adds to the life of an old pole if applied a foot or so above and below the ground line.

We had some interesting arguments about clearance over roads and in cultivated fields. It was sometimes necessary to make an interchange by taking up a sound pole of sufficient length and putting a short one in its place.

It was on this trip that the whole gang was laid up three days for disturbing a nest of hornets. The varmints tackled the horses and we all got ours, good and plenty, trying to protect and quiet the team.

Went down with Doc Stuver to look over our swamp land. There's considerable ice and snow yet, but there is only shell ice on the big ditch which shows the water is going somewhere.

Doc has been having a lot of fun, now the telephone plant is in operation. He has given up general medical practice and is busy as president of the company. Had a young fellow come here from the East to attend to the health of the community. The young man didn't seem to take well at first. It was funny too, for he tried every way to be agreeable and took a general interest in everything going on. I talked to Doc one day about it, for I liked young Hackney first rate.

"Never mind," Doc said, "if it's in him to make good here, his chance will come. If it isn't, we can help but little. He comes from good stock and I haven't lost faith in him."

You wouldn't hardly believe it, but Hackney's opportunity came a few nights after that. There was a gang of bad men over Big Run way. I guess Big Run has about as hard a name as any place I know of. Every once

in a while, a gang of young toughs comes to Podunk and proceeds to make merry. They make a practice of beating anyone who interferes with them. If no one does, they make it a point to abuse some one on general principles.

Down in front of the hotel the night I speak of, Big Jim Curly, the boss fighter of the gang, bumped into young Hackney, hoping to start something as nothing exciting had occurred up to that time. Doc Stuver was with Hackney. It seems Hackney didn't take any offense at being bumped himself, but when the ruffian bumped into Doc, gray and stooped as he is, the young doctor took fire, so to speak. That part Doc didn't tell me, but he told me what happened afterwards. "Young Hackney said to me," Doc said: "'There are certain times in a man's life when he ought to fight, even if he knows he's going to get licked, and this is one of them,' and with that he caught Jim Curly by the arm and turned him 'round. Then he told him a few things.

"Then the fight began. Jim was a good head taller than Hackney, but it didn't make up the difference between them by a long ways. Sometimes Hackney would have to jump off the ground to land a blow in Jim's face. He couldn't hit hard enough to knock Jim down, but Jim soon got tired of being hit so often and tried to clinch.

"Just then Jim's brother came along and was going to take a hand. No one seemed to want to stop him either. Hackney must have caught sight of him out of the 'tail of his eye' for he ducked the blow coming from behind, gave a quick turn half around and caught the fellow on the chin with his elbow. Jim's brother didn't have any further interest in the fight. He just laid around in the way and was walked on more or less.

"While Hackney was turning this little trick, Jim thought he saw a chance to get hold of Hackney and made a try. I was surprised Hackney didn't dodge him but he didn't. He caught him with his right arm hooked around his neck, struck him in the groin with his left and slammed him down on the sidewalk for another foot mat.

"Three others of the gang came out of the saloon just then and a couple of young fellows offered to help Hackney, but were told to keep out. The three of them only lasted a few minutes. Then Hackney herded them together, made them pick up the Curly brothers, dump them into the wagon and leave town."

The next day Jim Curly sent for Doc Stuver, but Hackney went instead. Jim's arm was broken by his fall. There isn't any terror in the name of Big Run any more and Hackney is the most popular man in these parts.

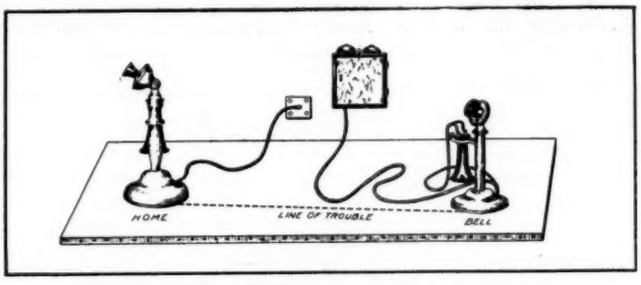
We've got a speckled hen that lays two eggs every other day and one between times. Doc says if she keeps it up she'll be old before her time. Your Uncle Dick.

Poor Maintenance Caused This.

We had a rather peculiar case of trouble some time ago. One of our lines, which connects with both the freight and passenger offices of a railroad company, would become grounded at times, or rather it would cross with the grounded side of the Bell company's line, causing a permanent signal. As all the telephones on the instrument circuit were desk sets with metallic bases, we supposed, as often happens, that the sets got together, with the bases touching each other. On calling the freight office the ground would sometimes "clear up" for awhile, but it was always declared that the telephones were at opposite ends of the table. Calling the passenger offices seldom changed conditions, so we had an idea the trouble was at the freight office. By the time the inspector would reach the office, the line was generally clear, and he was sure there was no swinging cross outside.

At last we cornered it, while "on," in the freight desk set. Then we noticed that, picking up either the Bell or our set from the table, cleared the ground. Inspection showed the table to be covered with what seemed to be ordinary oilcloth, but which contained a metallic substance, capable of carrying the current.

One of the leather bushings on our set had fallen off the



Defective Insulation on Desk Stand Bases Caused Trouble.

bottom, allowing the edge of the base to touch the oilcloth. The felt on the bottom of the Bell telephone had worn through enough to allow the metal to touch the table surface. There were therefore really three cases of trouble instead of one, but none was a case by itself. Insulating our set cleared the trouble.

Findlay, Ohio. G. H. Pope.

A Convincing Advertisement.

In a recent issue of the Elkhart (Indiana) Truth appeared an interesting and convincing advertisement, having this heading in black face type: "Easy Ordering by Telephone." It contained short advertisements of about 100 doctors, grocers, barbers, dry goods dealers, etc., with their telephone numbers. All the advertisements were secured over the telephone, and directly under the bold face heading the story was told in the following words:

"As you look over this list of merchants under their various classifications, you will no doubt realize how easy this telephone directory will bring you into communication. Call any of them and see what good service you will receive.

"Each of the advertisements listed below was solicited and arranged for over the telephone. The average time in calling, solicitation and arranging details was 90 seconds. It is but another proof of the value of the telephone in lightening the labor of everyday life. Save this, paste it in the back of your telephone book for ready reference, some day it may prove handy. In this lot you will find many old friends, and new ones, too, all ready to instantly respond to your call and supply your wants in their respective lines."

Queer Troubles in Gloucester, Massachusetts.

In Gloucester the request came in from one of our subscribers to repair his line as soon as possible, stating that he was unable to get central, says an employe of the New England Telephone & Telegraph Co. in the New England Telephone Topics. Upon sending the troubleman to make the necessary repairs, it was found that the bowsprit of a fishing vessel had torn away his loop and one section of line. Merely one case of the many, located on the waterfront, where lines and loops are constructed over the water as the best and most accessible means of reaching a subscriber.

Want Municipal System at Marquette, Mich.

A resolution has been adopted by the city council of Marquette, Mich., providing for the appointment of a committee to consider the feasibility of a telephone system to be owned and operated by the city. The question whether under the state constitution the city can take such a step will be investigated. Marquette operates its own electric lighting system and has poles in every street which can be utilized.

Railway Telephony—Practical Points in All Branches

A Regular Department Which Appears Bi-Monthly—Scope Includes Principles of Construction, Testing, Operation and Maintenance—Columns Open for Contributions on Matters of General Interest to Those Engaged in This Branch of Telephony

Emergency Methods in Railway Telephone and Telegraph.

By J. A. Kick.

The recent sleet storms, cyclones and floods have forcibly brought to our attention the inadequate provision for emergency telephone and telegraph communication. Many companies have been for days without communication through certain sections. In the case of railways, this absence of any means of communication is a serious handicap in handling trains or making provision for repairs to damaged track and other property.

Some telephone companies maintain emergency cable in proportion to the size of their plant. This cable is placed on reels that can be readily handled for quick transfer to the point where needed. Emergency cable should be stored with a view to being accessible for testing and repairing, quick movement for loading, and at the same time be located in a place where there will be the least deterioration and the least danger from fire or other damage, which might injure the plant and make necessary the use of the emergency material.

It was the writer's misfortune or otherwise, to have learned this lesson by a fire experience. A large relay office burned to the ground, destroying all working equipment and at the same time all surplus equipment which was stored in an attic storeroom. Had the surplus or stock equipment and material been stored, at least in part, in an available detached storeroom, a temporary office could have been set up in one or two hours instead of the 36 hours actually taken.

A little thinking and planning against misfortunes, which we hope not to experience, often results in no end of good. In connection with train dispatching, the end justifies the means. Expense of reserve and emergency equipment is frequently nullified by the saving represented in prompt restoration of service and absence of serious delays to trains. Some roads now maintain a complete portable dispatcher's telephone and signaling equipment. These portable equipments can be quickly transferred to a given point by regular or special trains and the circuit operated in two sections until the affected section is restored.

A portable dispatcher's equipment and one or two assembled complete way station equipments will be of service in case of station losses by fire or other causes. If such equipments are assembled, subject to emergency calls, they should not be used as a basis for supplying ordinary replacements, else in time of need they will be found incomplete and their true value lost.

For general temporary line repairs, reels of emergency cable will be the proper solution. Where important telephone dispatching circuits are concerned, a number of coils of a good weatherproof, twisted pair wire will be found to furnish the most ready means of restoring the important circuit. These coils of wire can be readily handled either by train or hand car and can be quickly uncoiled and laid upon fences and other structures. After each use the emergency cables and twisted pair wire should be carefully gone over, repaired and tested, to be made secure for the next call.

One of the trunk line railways maintains an emergency car in which is held inviolate reels of cable, coils of twisted pair weatherproof wire, cross arms, hardware, tools, and all of the necessities for an emergency call. This car is kept ready and located where a switch engine can back to it on a moment's notice.

Several roads now have a supply of the so-called "army buzzer" telegraph sets with which they can establish communication over any break, thus providing instantaneous connection and means for learning the extent of the damage as well as means for continuing train operation. These buzzer sets are used by the signal corps and other branches of the United States army and can be operated over ruptured submarine cables and otherwise unserviceable land lines. They can be used to great advantage by railways and other companies in time of interrupted service.

In commercial enterprises as well as in national policies it is well to "In time of peace, prepare for war" and failure to make these provisions for emergencies is sorely felt under such conditions as have been recently experienced.

A few of these "buzzer telegraph" sets distributed throughout the flood district would have brought the whole district into communication at once and have greatly assisted in the rescue and reconstruction work. These sets are simply an application of the interrupter used in grounded composite signaling, the signals being sent by controlling the interrupter with an ordinary Morse key. The signals are sent in the Morse code and received in a telephone receiver or howler.

The set, together with five or six cells of dry battery, can be carried by one man and connection made to a number of wires on the line. The signals will pass over breaks, miles in length, due to the fact that the relative high frequency of the interrupter causes the signals to be inductively sent over all of the wires on the line.

With such sets available, a general line failure would be the signal to place the set in circuit and begin calling with the result that the emergency circuit can be started in a very few minutes. A better knowledge of the range of this instrument would result in a general plan of placing these sets at regular intervals for emergency cases.

Where grounded composite sets are used they could be utilized to fill the emergency wants by a pre-arranged method of procedure, which would provide for listening for the distant signals and then communication by the Morse code.

Efficiency in Operation of Telephone and Telegraph.

By John H. Finley.

An altogether efficient machine, organization, or system of any kind would be one where maximum results would be obtained from minimum endeavor. In the telephone or telegraph field, this would mean maximum service from minimum expense or effort.

The items which go to make up maximum service may be listed as follows:

A. Greatest number of circuits for least number of wires.
B. Greatest number of calls for least number of lines.
C. Greatest number of calls in least length of time.
D. Greatest number of calls for least effort.
E. Greatest number of calls for least expense.

The items which go into the making of inexpensive operation are as follows:

A. Inexpensive first cost.
B. Inexpensive operating costs.
C. Inexpensive maintenance.

To one not familiar with telephone and telegraph properties the question would resolve itself into a mere question of the desirability of using telegraph or telephone on a given line to get a given result. But when we investigate further, we find that the properties of the telephone and telegraph lend themselves readily to a combined service which renders the question more complicated and at the same time produces more efficient results.

In Fig. 1*A* is shown a simple telephone circuit. As is well known, two kinds of current are employed. In this case one alternating 16- or 33-cycle current is used f r operating the bells and is produced either by a hand generator or other source of power; the other current originates from the transmitter battery. The transmitter is nothing but a low granular carbon resistance introduced into the circuit. The impact of the sound waves on the diaphragm increase or decrease the resistance of this carbon and thus causes a variable current to flow through the primary of the induction coil which induces a very high frequency alternating current through the secondary of this coil out to line.

This high frequency current has a periodicity of about 800, which flowing around the magnets of the receiver, causes the diaphragm to vibrate in unison to the variable current and voltage produced at the transmitter by the impact of the sound waves on the diaphragm. This vibration of the receiver diaphragm produces sound waves similar to those introduced into the transmitter diaphram.

Condensers of 1 or 2 microfarads offer very little resistance to this high frequency alternating current and even the low frequency, 16-cycle, generator current used for ringing, passes quite readily through them. As the capacity is reduced, a point is reached where the talking current is still quite perfect, but the ringing current is excluded from passing through the receiver. Due to this property, it has been possible to design circuits which allow of several receivers being left off the switch hook, and still satisfactory ringing obtained. A condenser inserted for this purpos: is shown at station No. 1 in Fig. 1*A*.

The generators used in these telephone circuits are of the open-circuit type; that is, the circuit is closed when the generator is operated. This is made possible by use of a pair of contacts which are closed by the armature shaft moving over

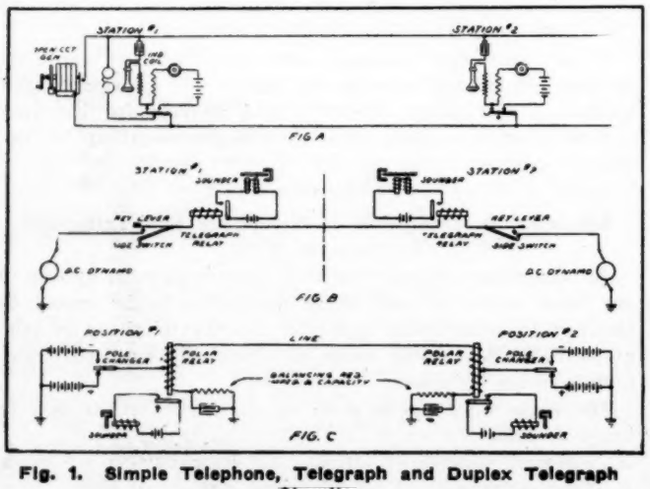


Fig. 1. Simple Telephone, Telegraph and Duplex Telegraph Circuits.

when the crank is turned. Two or three methods of producing this result are in general use. On. of the simplest is a cam arrangement of the shaft operating against a spring tension, as indicated at station No. 1, Fig. No. 1*A*.

In Fig. 1*B* is shown how one of the wires of Fig. 1*A* could be used for a straight Morse telegraph circuit. In this circuit it is well to note the following points:

First. This is a closed circuit system unlike the telephone system, which normally stands open through the switch hook as in Fig. 1*A*, station No. 1,

Second. Direct current is used throughout.

Third. All main line equipment is in series and responds to every make and break anywhere in the circuit.

Fourth. This is necessarily a grounded system, since it operates over one wire.

Fifth. The equipment used in this circuit is very simple, consisting simply of a means for breaking the circuit and a magnet to operate when the circuit is closed. This magnet has an armature which closes a local circuit through an audible signal known as a sounder.

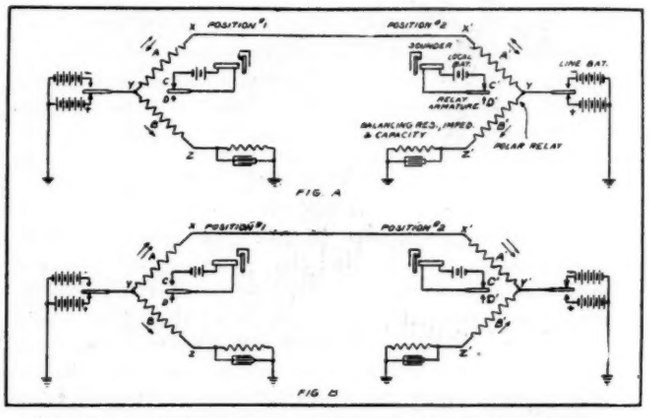


Fig. 2. Varied Duplex Telegraph Circuit Conditions.

Sixth. All batteries used on a system of this kind must be of the closed circuit type, or those designed so that less deterioration occurs when the circuit is closed than when it is open. In other words the batteries have a high internal resistance, thus preventing too rapid chemical change. Another class of current supply used on circuits of this kind is the direct current dynamo, which is used in all large centers of telegraph activities, one dynamo supplying several systems.

Duplex Telegraph Circuits.

The use of the same wire for duplex telegraph service is shown in Fig. 1*C*. The apparatus employed in a circuit of this kind is a little more complicated and requires a little higher class of maintenance. However, since one wire does the work of two straight Morse wires, the difference in the cost of maintenance is many times covered.

In connection with the apparatus used in this circuit, the following points are to be noted:

First. Ordinarily two polarities of battery are used at each end, although in some cases where the lines are short or easily balanced, one polarity and ground are used.

Second. An artificial line is introduced to balance the impedance and capacity of the line.

Third. A so-called polar or polarized relay is used. It is so connected that no matter whether positive or negative current is employed, the relay at the sending station is not affected, but the relay at the receiving station is operated.

The reason the relay at the sending station does not respond to the impulses sent out at this station, is because the relay windings and the line are balanced and connected, as shown in Figs. 2 and 3. The impressed voltages is such as to hold the relay in an operated position.

To explain the operation more in detail, reference is made to Fig. 2*A*. Coils lettered *A, B* and *A', B'* represent the windings of the relay. These windings are of such a character that current passing through the coils in position No. 1 from *X* to *Y*, and from *Y* to *Z*, will close contact *C*. In position No. 2, current passing through the winding *X'* to *Y'* and *Y'* to *Z'* will close contact *C'* and relay is then in an operated position.

Since current always flows from positive to negative, in Fig. 2*A* the following conditions are shown: Positive current is impressed at *Y* and *Y'*, and the direction of the flow indicated by arrows, each arrow representing a unit. Then there will be a flow of current from *Y* to *Z* and a tendency

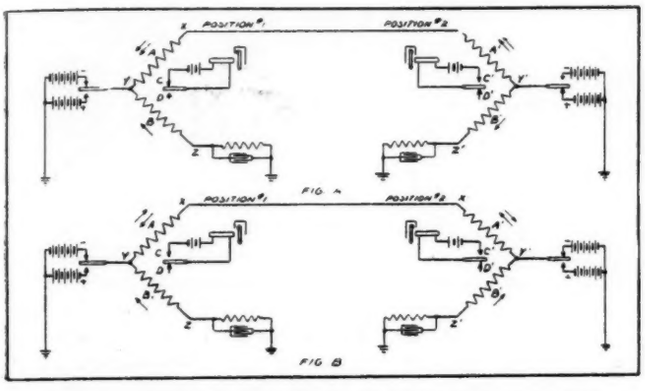


Fig. 3. Duplex Varied Sending and Receiving Conditions.

for a flow from *Y* to *X*, in position No. 1. But in position No. 2 there is a flow of current from *Y'* to *Z'*, and a tendency for a flow between *Y'* and *X'*. The flow from *Y* to *X* and *Y'* to *X'* counteract each other. Therefore, only the coils *Y* to *Z* and *Y'* to *Z'* are effectual and the armatures are held in an operated position as indicated.

The condition where position No. 2 is sending is shown in Fig. 2*B*. Negative battery is impressed at *Y'* and positive at *Y*. Now the flow of current in coil *B'* is from *Z'* to *Y'*, or in the direction to open contact *D'*, but there is twice the flow from *X'* to *Y'*, or in the direction to open contact *D'* and close contact *C'*, due to negative current impressed at *Y'* and positive current at *Y*. Hence there is no change in the position of the armature in position No. 2, as the stronger current is in the direction to hold the armature in the position shown. In position No. 1, positive battery being impressed at *Y*, the flow of current through coil *B* is from *Y* to *Z*, and is in the direction shown by the arrow and it would have a tendency to open contact *D*, but the current through coil *A* is from *Y* to *X*, and is approximately twice that through *Y* to *Z*. It is in the direction indicated by the arrows and is such as to open the local contact *C*. Hence the circuit through the local sounder is opened and impulses sent by reversing the positive and negative contact at position No. 2, close and open the sounder at position No. 1, but does not affect the sounder at position No. 2

Fig. 3*A* shows the same conditions as Fig. 2*B*, except position No. 1 is sending and position No. 2 receiving.

In Fig. 3*B* is shown the condition when both positions No. 1 and No. 2 are sending.

It is to be noted in this case that the coils *B* and *B'* are active, inasmuch as the current in the coils *A* and *B* are counteracted since the same voltage and the same polarity is impressed at *Y* and *Y'*. In this case, however, the flow of current in winding *B* and *B'* is opposite in direction and effect to the conditions outlined in Fig. 2*A*. Hence the local contacts are opened and closed in response to makes and breaks in the negative battery at the opposite end of the line, i. e. operating the reversing apparatus at position No. 2, operates the local circuit at position No. 1 and vice versa.

In other words, the duplex telegraph circuit is so arranged that a message can be sent in one direction while a similar message is traveling in an opposite direction, or at each end of the circuit, it is possible to have two operators, one a sending and the other a receiving operator. The receiving operators cannot send nor the sending operators receive.

(To be continued.)

Annual Meeting of Railway Telegraph Superintendents.

The date set for the annual convention of the Association of Railway Telegraph Superintendents is now drawing near, being less than a month away. This year the convention will be held at St. Louis, the dates being May 20, 21 and 22.

The various committees in charge of the meeting have the arrangements well under way. The headquarters will be at the Planters' Hotel. P. W. Drew of Chicago, superintendent of telegraph, the Minneapolis, St. Paul and Sault Ste. Marie Railroad is the association secretary.

Private Cars on the Erie Equipped with Telephones.

The Erie Railroad Co. is equipping its private cars with intercommunicating telephone systems which are similar in effect to those used in business offices and factories. President Underwood's car, No. 999, was the first one to be equipped. It has a system of six stations interconnecting the staterooms, observation room, stenographer's desk, and the kitchen. A conversation may be carried on between any two of the telephones, and orders transmitted, without any person leaving his place.

The instruments are of the hand set type, each equipped with a cord and plug. Jack plates are mounted on the car wall, each having a push button and jack into which the plug of the hand telephone is inserted. When not in use the plugs are withdrawn and the hand sets are stored away. The different stations are called by means of a buzzer system. The call buttons are arranged on a dial plate and the system is so wired that only the buzzer at the telephone wanted is rung.

The ordinary wall or desk telephones were not installed as they would not give satisfactory service on moving trains. As long as the train was at a standstill they could be used, but as soon as it started the vibration of the wheels upon the rails would be carried to the transmitter and the resulting noises would completely drown the telephone conversation. The use of hand sets obviates this difficulty since the body acts as a shock absorber.

The private car telephone system is also arranged for making connections with an outside telephone line so that local or long distance calls may be had from the car. The signaling current for calling the telephone exchanges is obtained from an interrupter operated from batteries.

Other private cars on the Erie system will be equipped as rapidly as it is possible for them to be called in from active service long enough to complete the installation work.

"Common User" Principle for Telephones.

To compel the application of the "common user" principle to the wires of the Pacific and Home telephone companies in the new Oregon Hotel in Portland, Ore., is the purpose of a complaint filed with the railroad commission by the hotel company. The Home Telephone Co. is anxious to co-operate but the Pacific absolutely refuses.

Both companies have switchboards in the hotel lobby, and located close together so that it would be little expense for the calls coming over one wire to be connected up with the instruments of the other company.

"It would simply mean the lengthening of the cords connecting with the trunk lines of the respective switchboards to such length that they can be 'plugged' into the other switchboard," says the hotel man. This, of course, means a single telephone system in the hotel and this the Pacific company objects to.

Protest Rate Increase at Tuscola, Ill.

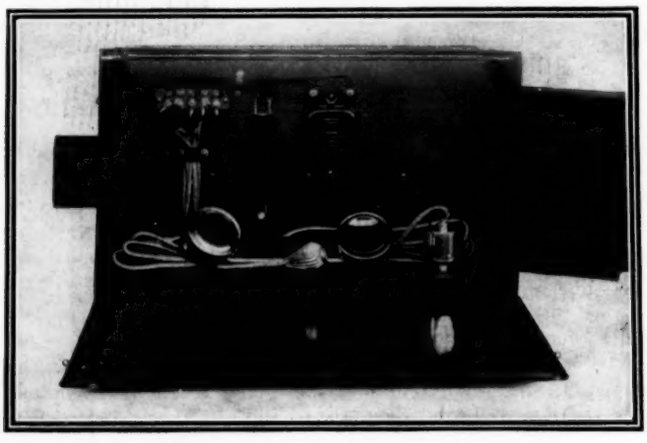
Farmers near Tuscola, Ill., recently held a meeting and voted to file a protest against a proposed raise of 25 per cent. in rates by the Douglas County Telephone Co.

From Factory and Salesroom

The Secret of the Kinetophone.

By H. C. Slemin.

There is something highly entertaining about the startling illusion and perfect synchronism of talking pictures produced by the kinetophone, Thomas A. Edison's greatest and latest invention. The great influence of "the movies"



Telephone Stage Outfit Used with Talking Pictures.

is everywhere apparent. It was a master stroke in conceiving the idea of making the kinetoscope and phonograph perform together, because the result is even more wonderful and inspiring than a production from either device alone.

The telephone controls the operation of both instruments and is the means by which the operators, stationed at each machine, cause them to agree in time and accomplish the absolute synchronism between motion pictures and sound waves. People realize that a sheet of white cloth cannot talk, hence they conclude there is a phonograph behind the screen on the stage, but they do know that the kinetoscope is in the gallery, several hundred feet away. Then how are both made to operate in such perfect time? Even after one is told that the telephone is making it possible to accomplish perfect results between pictures and records he is no less enthusiastic because of the wonderful results that can be produced in portraying play acts, etc.

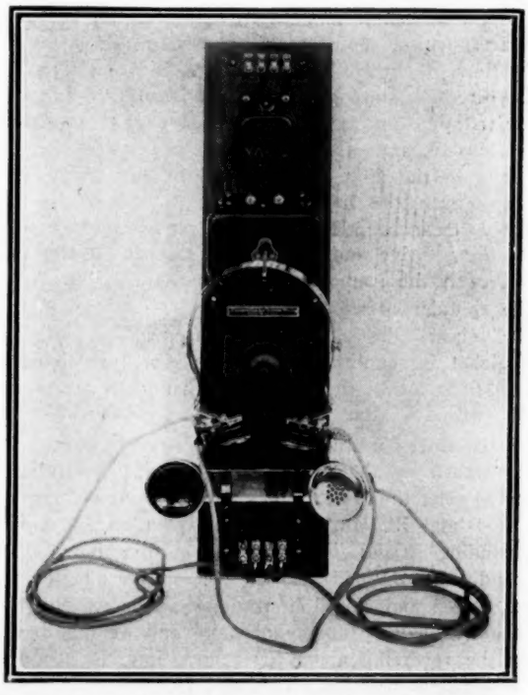
The object of the telephone system is, first, to provide a means of signaling between the stage and the kinetoscope booth in the gallery; second, to enable the phonograph operator on the stage and the kinetoscope operator in the booth, to converse telephonically; third, to enable the kinetoscope operator to hear the sounds emitted by the phonograph. One of the illustrations shows the stage outfit, which consists of a steel box containing a Stromberg-Carlson No. 6-E combination-phone, Edison transmitter, push button and a buzzer. This equipment is mounted on the audience side of the trap under the stage where the phonograph is also located. The equipment is enclosed in a steel case so that after the trap is closed, no water can get to the equipment when the stage is being washed down.

The booth set shown in the other illustration is mounted on the wall in the booth with the kinetoscope for use by its operator. It consists of a combination-phone, panel push button and a buzzer, the same as furnished with the stage outfit. In addition, there is provided for use by the kinetoscope operator, a Stromberg-Carlson double receiver headset, which is in circuit with the Edison transmitter mounted on the side of the horn on the phonograph.

In preparing for a kinetophone performance, each operator when in his place, lets his fellow operator know of his presence by pushing the button which signals the operator in the booth and on the stage, by means of the buzzers. The operator then removes the combination-phone from its support and, by pressing the button just under the transmitter on the hand set, he can converse with the other operator. Finding everything in readiness, the phonograph operator places the Edison transmitter in the side of the horn on the phonograph, while the kinetoscope operator places the double receiver headset on his head so that he can hear the phonograph through the Edison transmitter and get the exact time of the song or recitation that is being given when the phonograph starts.

The operator on the stage can talk to the operator in the booth by speaking into the Edison transmitter, while the other operator has the headset in position. But in order for the operator in the booth to converse with the operator on the stage, it is necessary for him to use the combination-phone. In any event, the kinetoscope operator is able to hear the sound emitted from the phonograph either through the transmitter mounted in the phonograph horn or through the combination-phone. In the latter case it is necessary to hold the combination-phone up in front of the horn of the phonograph. Every provision is made for perfect telephone communication between the two operators in order that both machines can be run at the same speed at the same time, which is absolutely necessary to produce good results.

Since the kinetophone was perfected and made ready for commercial use, the Stromberg-Carlson Telephone Mfg. Co. has been working with Thomas A. Edison's engineers



Moving Picture Operator's Telephone Equipment.

in perfecting the design and arrangement of this telephone system so as to make it durable and efficient. The unusual conditions under which this apparatus must be ready for instant service, have developed several novel features which have been supplied by the manufacturers.

Start for Flooded District—Track Washed Out by Water—Taking Matthews Anchors Ahead to Use in Getting Track in Place.

The Stromberg-Carlson Co. is furnishing the complete assembled equipments as shown in the illustrations. Besides having already furnished several hundred equipments, it furnished the first outfits for theatres in Rochester, Providence, Milwaukee, Baltimore, New York City, etc., where the first public demonstration of the kinetophone was given.

Novel Use for Matthews Anchors.

Several weeks ago, when the floods were at their height, W. N. Matthews & Bro., St. Louis, were called on the telephone late Saturday afternoon by the local office of the Louisville & Nashville R. R. Co. and asked if they could ship twelve 8-inch guy anchors on the train leaving St. Louis at 8:34 Sunday morning. They replied they could and were given the order. All the information received as to what purpose the anchors were wanted was that they had something to do with the overflow of the Wabash River, at Maunie, Ill. As this information was not very illuminating, Claude L. Matthews decided to take his Kodak and go down on the same train with the anchors. He had a very interesting trip and took a number of photographs, some of which are reproduced on this page.

Over a mile and a half of track was up-ended along the Western Union poles by the flood and looked like a paling fence. When the waters receded sufficiently to permit the use of hip boots, the repair gang under the charge of A. H. Snellen, of Louisville, got to work and started to pull it back on the right of way.

They screwed the 12 8-inch Matthews guy anchors down at intervals of one to about every 50 feet and at an angle of about 45 degrees. These anchors were screwed down under the water, which was from 18 inches to 3 feet deep and running five or six miles an hour, until the eyes were down to the ground. Eight-inch, three-sheave, blocks were attached to the eyes of the anchors and to the track. Ten to fifteen men pulled on the fall line. This was sufficient to "roll" and pull the track back on the right-of-way. As fast as the track was replaced the anchors were unscrewed and taken on ahead, and the operation was then repeated.

One illustration shows the temporary end of the line from St. Louis and in another view men are shown pulling track back into the right-of-way with the Matthews guy anchors. Men are also shown taking anchors out to be screwed down ahead of the others. Another view shows the crews pulling against the Anchors. In another photograph, the track having been pulled back into the right-of-way, the men are shown lining it up with crow bars before the ballast was poured on to it.

Mr. Matthews was told by the superintendent of the job, that the best previous rate of progress under similar conditions was about 600 to 700 feet a day. With the Matthews 8-in. anchors, they progressed at the rate of over 1,500 feet a day.

Pulling Against Anchors to Bring Track to Position—Lining up Track—Rails Restored With Work Going on in Distance.

B. C. Groh Head of New Automatic Electric Department.

Bernard C. Groh, until recently chief engineer of the Illinois Telephone & Telegraph Co., of Chicago, has become plant construction engineer for the Automatic Electric Co. This position is a new one and is in many respects unique in the telephone manufacturing field, having been created mainly to meet the increasing demands for expert advice along the lines of scientific management as applied to the designing of automatic telephone exchanges.

Realizing that to obtain the full efficiency of automatic equipment, a harmonious arranging of the entire plant, outside as well as inside, is necessary, the manufacturers for some time past have made a practice of detailing members of their engineering staff to act in an advisory capacity to operating companies installing automatic equipment. This practice has proved so valuable to the operating companies that it was decided to assign the work to a newly created

department, and Mr. Groh, who both by training and personality is peculiarly fitted for the position, was induced to become its chief.

Another phase of Mr. Groh's work will be making development studies for existing and projected plants and

B. C. Groh.

also drawing up standard plans and specifications for companies contemplating enlarging their present plants or changing from manual to automatic equipment.

The inauguration of this new department is looked upon by the Automatic Electric Co. as an important step toward the establishment of a thoroughly efficient service department, the chief mission of which will be the development of the highest efficiency in the individual automatic exchange and the elimination of unnecessary cost through imperfect adjustment of the various parts of the system.

Although but 36 years old, Mr. Groh holds a place of unusual prominence in the telephone world and from every angle is especially well fitted to cope with the problems that will come before his department. It was some 15 years ago that Mr. Groh entered the telephone field, starting in the engineering department of the Michigan Telephone Co. at Detroit. He then had a varied experience with the Erie Bell system, and in the equipment department of the Michigan Bell, later becoming superintendent of equipment for the Inter-State of New Jersey. After some time spent in the engineering department of the A. T. & T. Co. at Boston under Dr. H. V. Hays, Mr. Groh became engineer in the field for the A. T. & T. Co., working on long distance conduit construction adjacent to New York.

His experience with the Bell companies was concluded when he became chief engineer of the Subway Telephone Construction Co. in Chicago, about four years ago. At that time he was general plant inspector for the Central District & Printing Telegraph Co. (Bell) at Pittsburgh. When the automatic telephone system in Chicago was turned over to the Tunnel company, he became its assistant chief engineer and later after the re-organization and subsequent formation of the Illinois Telephone & Telegraph Co. became chief engineer of the later company.

Mr. Groh was largely responsible for standardization of the A. T. & T. construction specifications and methods. Among his construction accomplishments may be mentioned the building of Trenton and Atlantic City, N. J.

Mr. Groh's many friends in the telephone field will be glad to learn of his new connections and will wish him every success.

A Bargain Sale of Stromberg-Carlson Wire.

A sample card containing ten samples of "quality wire" at "bargain prices" is being sent out by the Stromberg-Carlson Telephone Mfg. Co., of Rochester, N. Y., to all of its customers. Accompanying each sample is an order number, description, number of feet per pound and price per pound. This company has also shown a high degree of enterprise by sending to customers in the flood district the following interesting letter:

"Let's get shoulder to shoulder and boost Independent telephony in your locality.

Let's make capital of the flood catastrophe by rehabilitating service promptly. We can do it—together. But we've got to get action now.

Everybody, everywhere, wants their telephone working. It's up to us to get the system in order at once.

You can give the best service in town—the first in service gets the most business. You can add new subscribers now—it's a chance in a lifetime. Now.

Call us for telephones, switchboards, aerial and underground cable, supplies. We have the stock and a variety of it in Chicago and Rochester.

Our salesmen are willing workers and can lend you real assistance. Send for them to come and see you if necessary.

To help serve more customers in Ohio we have put another salesman in the state.

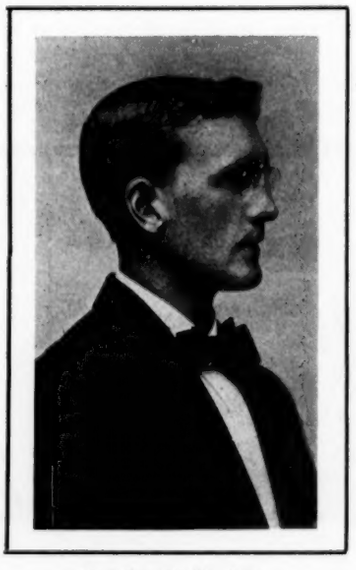
Our entire plant organization is ready to handle all orders and furnish all possible assistance in record time.

It will pay you to give us the opportunity to help you. Remember—we're working with you and for you."

In the foregoing letter the company also stated how its representative could be reached at Columbus, Ohio, and that instructions addressed to him would be delivered and answered if he were not there the moment the communication arrived.

Telephone Sales Manager for W. N. Matthews & Bro.

Charles Ellis Heston, who since 1911 has been with Stromberg-Carlson Telephone Manufacturing Co., as salesman, giving special attention to all sales dealings with the U. S. government, has just entered the employ of W. N. Matthews & Brother, of St. Louis, Mo., as sales man-



Charles E. Heston.

ager of the telephone department. Mr. Heston was born at State College, Pa., in 1883 and was educated in the high schools of Seattle, Wash., the South Dakota Agricultural College, of Brookings, S. D., and in the University of Wisconsin, College of Engineering, class of 1905.

Mr. Heston has had an interesting and varied experience, having served with the Dakota Central Telephone Co., of South Dakota, as lineman and exchange manager, with the Chicago Telephone Co., as switchboard manager, with the Brookings telephone exchange, of Brookings, S. D., as manager, with the engineering department of the Wisconsin Telephone Co., of Milwaukee, Wis., with the electrical division of the war department as electrical engineer in charge of electrical installations at New York, Potomac River, Puget Sound, Manila, Philippine Island harbors and seacoast fortifications, with Tower-Binford Electric Manufacturing Co., of Richmond, Va., as salesman, and twice with Stromberg-Carlson Telephone Manufacturing Co. From this it will be seen that Mr. Heston is well qualified for his new duties, having had experience in all branches of the business.

More Automatics for Australia.

Cable advices from Australia bring word of a further extension of automatic telephony in the Commonwealth. The latest exchange to be equipped with this type of apparatus is Brighton, an important station in the Melbourne region, where a 1,500-line equipment manufactured by Automatic Electric Co. of Chicago, is to be installed.

In his annual report to the Parliament of Australia, the postmaster has the following to say of the telephone situation in that country:

"During the past year exhaustive inquiry has been undertaken into the question of automatic equipments. The visit of the chief electrical engineer to America and Europe was, in a large measure, devoted to an investigation of the questions of cost and relative efficiency of automatic versus manual telephone switching systems.

The problem whether the telephone switching of the future is to be manually or mechanically performed, and, if the latter, whether to the full extent of entirely eliminating the telephone operator except for trunk and special calls, is a highly technical and exceedingly complex one. Valuable data has been collected from other telephone administrations in America, England, Germany, Austria, Holland, etc., but Australian conditions radically differ in many respects from those existing abroad. It was, consequently, decided as a practical experiment, to install an automatic equipment in a medium-sized exchange within the Commonwealth, and Geelong was selected for the trial. Full automatic working was established in that exchange on July 6, last, and since that time close and continuous attention has been given by my officers to the working of the experiment. Much useful information as to the precise applicability of automatic systems generally, and of the system chosen in particular, has been obtained. So far the results have been satisfactory."

As a result of the experiments and observations made at Geelong, four other exchanges, those at Balmain, Glebe, Newtown and Perth, have been ordered equipped with the automatic system. Including a 500-line exchange ordered for the New South Wales Railways, six automatic exchanges having an initial equipment of 10,800 lines have been ordered by the Australian government from the Automatic Electric Co., through its agents, Automatic Telephones Australasia, during the past four months.

Manufacturers at the Western Pennsylvania Convention.

A great number of telephone visitors took interest in the Stromberg-Carlson exhibit at the Antler Hotel, Pittsburgh, during the meeting of the West Pennsylvania Independent Telephone Association last week. The company had its representatives, F. C. Redfield and D. W. Brown, in attendance with a complete line of standard equipment for both local and common battery systems.

Particular interest was shown in the Inter-Comm-Phone apparatus on display, which is a new product being extensively furnished by this manufacturer. Some telephone men were greatly interested in the "Telodetective" for exchange use at night.

The company was well satisfied with its success at this convention and believes that everybody in attendance had an opportunity to examine its full line of equipment.

The Cracraft, Leich Electric Co., of Genoa, Ill., had a complete exhibit of its equipment, showing the Cracraft, Leich standard magneto and common battery telephones. A demonstration of the Automaphone, used in connection with the Automaphone P. B. X., was also given and was of interest to everyone in attendance. The value of the Automaphone as a rate raiser for magneto exchanges or as economical equipment for private branch work was told by A. J. Kohn, sales manager, who was in charge of the exhibit. Full information pertaining to this interesting instrument can be obtained by writing the company at Genoa, Ill.

Brazos Valley Company Issues $1,000,000 in Bonds.

The Brazos Valley Telegraph & Telephone Co., of Waco, Texas, has filed a deed of trust securing $1,000,000 issue of 6 per cent. gold bonds in favor of the St. Louis Union Trust Co., St. Louis, Mo. The bonds are due and payable May 1, 1941. The additions and improvements to be made by the company include the purchase of the building occupied by the company in this city and the construction of a toll line from Waco to Dallas.

Utilizing Federal Trucks for Hauling Poles.

The Portland Railway Light & Power Co. is using an automobile truck with a trailer to haul poles. The truck is a regulation Federal model equipped with a trailer. This latter is nothing more than the rear wheels from a horse truck and is secured to the motor truck by means of a 22-foot extension center pole which can be varied in length

Federal Truck and Trailer Loaded with Poles.

from 15 to 22 feet. The length of the average pole carried on the trailer is 40 feet.

The power company finds its new scheme a much quicker way of transporting telephone and electric poles throughout the suburbs and adjacent country. Heretofore when poles had to be shipped out into the country, it was done by means of the freight and transportation companies. The poles were loaded upon flat cars and shipment was frequently delayed for several weeks on account of switching, etc. The truck has an average speed of 15 miles per hour and is able to touch upon any surrounding town with a load of from one to five poles, in a day instead of two or three weeks, as with the old method.

To date the Portland Railway Light & Power Co. is using ten Federal trucks in its various departments. It states they are exceedingly well suited to this line of business in the service, line and repair departments.

Legal Cases and Decisions

By A. H. McMillan

Councilman Holding Franchise.

"I have been elected a member of the council of this town, and hold a telephone franchise. Do you know if a person holding a franchise in a town of Kansas can serve on the city council? Our county attorney says that my franchise will be taken from me if I become a councilman."

We know of no law prohibiting a person, holding a franchise in Kansas towns, from serving on a city council. The law undoubtedly prohibits the granting of a franchise to a councilman but would not prohibit a person who had held a franchise, previous to his election, from being elected, unless there is some recent legislation on the subject.

Building and Operating Rural Telephone Lines.

"A company of farmers has given up its telephone line and paid back the money to the shareholders. The owner of the line with which they wished to connect refused to do so unless they turned the line over to him and for this reason the farmers gave it up. I would appreciate it if you would send me a copy of the law governing the rural telephone lines, as to building and operating."

The law governing the building and operating of rural telephone lines is not published in any compact form that we could send you.

Your company would probably find it advisable to incorporate under the laws of Nebraska, which will be found in the regular publications of the laws of the state. Other legal principles governing the subject will be found in the decisions of the supreme court of Nebraska, while you may get some information concerning the general subject of telephone law from McMillan on "Telephone Law."

Liability when Light and Telephone Wires are Adjacent.

Telephone wires and the electric light wires of a city were in close proximity. A telephone employe, acting within the scope of his authority, and at the direction of the company, had removed the telephone from a house. In doing so he cut a wire running from the top of a pole to the telephone in the house, and negligently left the wire unfastened and permitted it to stretch across the sidewalk near the premises. The wire, being unfastened, slackened and came in contact with one of the city electric light wires. A pedestrian on his way to work suddenly came in contact with the wire and was injured. The injured man brought suit against the telephone company, the city and some of the employes of the telephone company. A verdict was rendered against the telephone company alone. The telephone company took an appeal but did not secure a reversal.

The company contended that the injured man was guilty of contributory negligence because he picked up the wire and threw it off the sidewalk out of his way. This was held not to be the case because there was nothing to indicate that it was a live or dangerous wire. It was also contended that the judgment should be reversed because the plaintiff failed to prove specifically how or in what manner the wire was broken or became charged with electricity, nor how long it had been broken and lay upon the sidewalk in such dangerous condition.

The court overruled this contention on the ground that the broken wire on the sidewalk, dangerously charged with electricity, was sufficient to raise an inference of negligence against the telephone company. It was also held that when suit was brought against two or more defendants, jointly, for negligence, a verdict might be returned against one only if the facts authorized it. In the course of the decision, the court quoted as follows:

"Where wires, charged with a deadly current of electricity, are strung along a public highway, the degree of care required to prevent injury to property or persons lawfully on the highway is governed by the amount of danger attending such use of the highway by the owner of the wires.

"A broken or fallen wire in a street, charged with a dangerous current of electricity, affords a presumption of negligence on the part of the owner of the wire. . . . . Where the wires of two companies cross or are otherwise so related that there is danger of contact between them, there is a duty on both to guard against such contact, and for a neglect of this duty, the companies are jointly and severally liable. Cases of this sort arise mainly where telegraph or telephone wires cross or parallel light or trolley wires."

Southern Bell Telephone & Telegraph Co. vs. Davis. 76 Southeastern, (Georgia) 786.

Horse Entangled with Wires.

A man was injured by his horse becoming entangled in some telephone wires as they were about to be stretched taut over the poles, where employes of a telephone company were constructing a line opposite the man's premises. The telephone company contended that the man was guilty of contributory negligence because he knew of the danger that lay in his way, if his team stood upon or over the wires while they were being pulled up into position, and was told that the wires were likely to be put up at any time.

He contended that he had looked, watched, and had done all that a reasonably prudent man was required to do. The court held that the question of liability was for the jury. Balderson vs. Portland Telephone Co. (Michigan) 139 Northwestern, 7.

Regulation of Rates.

The laws of Tennessee, after granting the city of Memphis enumerated powers, provided that it should have power over all other affairs in the taxing district in which the peace, safety and general welfare of the inhabitants were involved. The legislative council was vested with the power and charged with the duties of making all laws or ordinances not inconsistent with the general laws on every subject within the local government instituted by the act. Subsequent acts gave the council the right to fix and regulate the rates of certain public service corporations other than the telephone companies. The council was also given power to pass for the government of the city, any ordinance not conflicting with the constitution or laws of the United States or of the state of Tennessee.

Under these circumstances, the city attempted to regulate telephone rates, but was stopped by injunction. The court held that the term "general welfare," used in section 3 of the act of 1879, was limited to powers connected with those concurrently granted, and that the city had not been granted legislative power either by the original or subsequent acts to regulate the rates of telephone companies doing business therein. The law providing that the legislative council of a taxing district should have power to regulate the charges of public service corporations other than those of telephone companies was held to show an intention on the part of the state to reserve to itself the right to regulate telephone rates.

This right was held to be a legislative right of the state, which remains in the state legislature, and cannot be exercised by a municipal legislature, unless and until it has been granted by the former to the latter. Cumberland Telephone & Telegraph Co. vs. Memphis 200 Federal, 657.

Waiving Right to Locate Poles.

The Brown Telegraph & Telephone Co. brought suit to restrain by injunction the officers of the city of Brownwood, Texas, from prosecuting, arresting or in any manner interfering with the company or its servants in the construction of a telephone plant in the streets. Previous to beginning suit, the company had filed a petition with the city council, filing a map showing the location of its proposed line, tendering a certified check for $90 to hold the city harmless against damage to sidewalks, streets or alleys, agreeing to comply with all city ordinances, and to permit the city to use the top cross arms for police or fire alarm purposes, and asking for approval of the map and route.

The petition was referred to a committee of the council which reported in favor of granting the petition. The council refused to concur in the report and denied the permit. The company had already built its line to the city at an expense of $5,000 and had about $700 worth of mate-

rial on hand to build its line into the town, but was prevented from so doing by threats of prosecution on the part of the city officers. The city defended the action on the ground that the granting of an injunction would divest the city of the possession of its streets; that the company had a complete remedy at law; and that the city had the right to designate where the poles should be placed.

The court overruled these contentions, holding that the company had a right to set its poles and wires along the street, subject only to the right of the city to designate the location and kind of poles, so that an injunction would not divest the city of the possession of the streets. The council was further held to have waived its right to direct where the poles should be located, so that the company had the right to proceed with the work according to the ordinance. The court also held that the company did not have a complete legal remedy and so was justified in asking for the injunction.

The court further found that the fact the company deposited a certified check instead of money was not a defense on the part of the city. City of Brownwood vs. Brown Telegraph & Telephone Co., 152 Southwestern, 709.

Record of Telephone Patents Recently Issued

1,056,021. March 18, 1913. COIN CONTROLLED TELEPHONE SYSTEM; G. A. Graves, LaGrange, Ill. Describes circuits by means of which a relay controls a disabling circuit used in connection with a coin controlled telephone set.

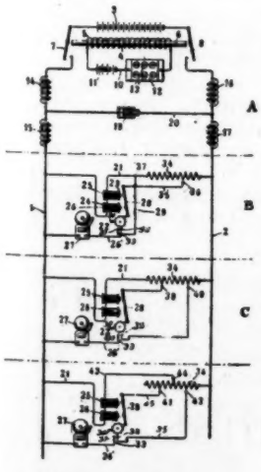
1,056,196. March 18, 1913. TELEPHONE RECEIVER SUPPORT; F. S. Maxwell, Liberty, Ill. A bracket, having a swinging arm, is rigidly secured to the upper part of a desk telephone. The receiver is supported by the swinging arm, and arranged to rest on the switch hook.

1,056,300. March 18, 1913. RELAY SYSTEM; E. W. Preston and G. L. Nickerson, Sioux City, Iowa. Relates to a symmetrical relay system used in combination with two telephone lines. The relay system is divided into two parts, the main feature of each part being sensitive relay operated by an induced current assisted by direct current from an auxiliary circuit.

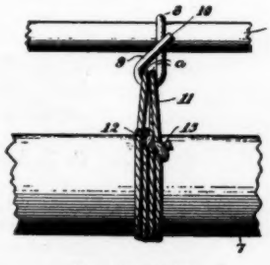
1,056,350. March 18, 1913. TRANSMITTER; R. S. M. Mitchell, Syracuse, N. Y.; assigned one-half to E. A. Newcomb. The instrument has a diaphragm which by means of levers compresses a series of spiral electrodes.

1,056,423. March 18, 1913. TELEPHONY; Morton L. Johnson, Chicago; assigned to Corwin Telephone Mfg. Co. The operation is described, of switching devices and electromagnets at the subscribers' stations on party lines by means at the exchange, responsive to the current initially flowing over the line, in turn operating to limit the line to current to which the magnets are not responsive. The station first taking the line for use may thus have the use of the line to the exclusion of the other stations.

1,056,424. March 18, 1913. TELEPHONY; Morton L. Johnson, Chicago; assigned to Corwin Telephone Mfg. Co. Relates to party lines connected to an exchange which has a trunk line extending to another exchange having equipment interfering with the proper transmission of signaling current. Means are provided at the second exchange and there governed for con-



No. 1,058,176.



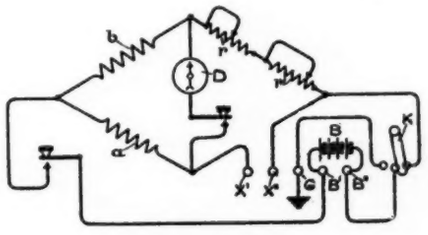
No. 1,058,364.

trolling the application of signaling current to the trunk and the line connected therewith. At the first exchange equipment is installed for removing trunk line apparatus from such circuit association with the line as would interfere with the proper transmission of signaling current.

1,056,425. March 18, 1913. TELEPHONY; Morton L. Johnson, Chicago; assigned to Corwin Telephone Mfg. Co. Describes a party line lockout system whereby a calling party may use the line to the exclusion of other stations on the same line.

1,056,559. March 18, 1912. CABLE HANGER; Claude Lingle, Clinton, Mo. Comprises a spring wire saddle having laterally extended ends, a gripping portion and a bail shaped to receive the cable.

1,056,637. March 18, 1913. COMBINED TELEPHONE AND FIRE ALARM SYSTEM; Wm. W. Dean, Chicago; assigned to Consoli-

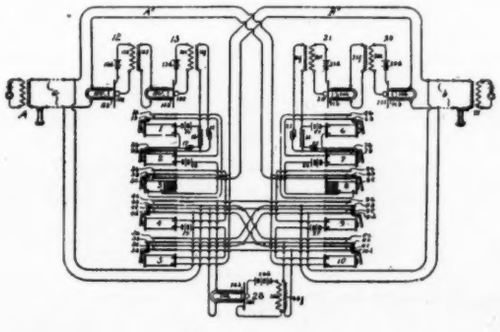


No. 1,057,817.

dated Fire Alarm Co., New York. Features include, in addition to the telephone apparatus, means on the line for sending a varying current over one side of the line, a transformer at the central office having differential windings in the opposite sides of the telephone line, a tertiary winding for it and registering apparatus connected with latter winding. The arrangement of the windings is such that the transformer is unresponsive to telephone currents in the metallic line, but is responsive to varying current over one side of the line, thus actuating the registering apparatus.

1,056,655. March 18, 1913. LOCKING DEVICE FOR TELEPHONES; Alfred Fornander, New York. Describes a hinged clasp lock which is attached to the pedestal of a desk stand and engages the receiver hook to prevent removal of the receiver.

1,057,500. April 1, 1913. LOCK-OUT SWITCH FOR PARTY TELEPHONE LINES; J. C. Roberts, Chicago; assigned to Western Electric Co. Describes the combination with a ratchet of a polarized magnet responsive to current of one polarity for advancing it, and contact springs. Also mechanical means, operated by the magnet when the ratchet has been advanced a pre-



No. 1,056,300.

determined distance, for actuating a lever controlling the operation and locking of the ratchet.

1,051,507. April 1, 1913. COIN COLLECTOR; DeWitt C. Tanner, Short Hills, N. J.; assigned to Western Electric Co. The feature is a latch operated by electromagnetic means to control the course of a deposited coin.

1,057,516. April 1, 1913. TELEPHONE SET; A. B. Allen and

Leonard Day, New York. Comprises a desk set of an ornamental character. The circuit is controlled by a receiver supporting tilting platform.

1,057,595. April 1, 1913. TELEPHONE SYSTEM; David L. Temple, Chicago, and Chas. L. Goodrum, Atlantic City, N. J.; assigned to American Electric Co. Relates to a metallic circuit system of the common battery type describing especially the switchboard lamp signaling arrangements.

1,057,817. April 1, 1913. APPARATUS FOR FAULT LOCATION ON ELECTRICAL CONDUCTORS; Herbert M. Friendly, Portland, Ore. Describes apparatus parts adapted by proper connections to form a Wheatsone bridge. Three scales are provided to facilitate mechanical addition on subtraction of resistances.

1,058,120. April 8, 1913. TELEPHONE MUFFLER; Maximilian Weil, New York. A muffler or hood having vacuum-jacketed walls and a mouthpiece is described. It is adapted to seat against the front of the diaphragm case of a telephone transmitter and is provided with attaching means to embrace the transmitter sides. It is intended to prevent speech being heard by others in the room.

1,058,176. April 8, 1913. SELECTIVE SIGNALING SYSTEM; W. E. Harkness, East Orange, N. J. Is intended for railway dispatching use on lines having a plurality of stations. Comprises a selector in a closed bridge of the line at each station; an electromagnetically operated signal in a normally open bridge at each station; variable resistance means in each of the bridges; and means for changing the variable resistance in one of the bridges when the normally open bridge is closed by the selector.

1,058,364. April 8, 1913. CABLE HANGER; Frank B. Hall, Newton Falls, Ohio. Describes an inverted U-shaped wire yoke saddled to the messenger wire and a wire hook integral with and extending from each end of the yoke. A Marline cable loop is supported from the hooks.

1,058,505. April 8, 1913. TELEPHONE SYSTEM; Howard J. White, San Francisco. Relates to the control electrically from the central office of a subscriber's coin mechanism. Accomplished by means of the induction coil action on special mechanism, when energized to a greater degree than required for the telephonic action.

1,058,631. April 8, 1913. TELEPHONE ATTACHMENT; Adolph Schlosser, Dodge, Neb. Includes a bell adapted to be operated when a person on a party line attempts to listen to conversation.

Condensed News Reports

Officers of Companies are Earnestly Requested to Forward Us Promptly All Financial and Other Statements as Soon as Issued, and Any Items of Interest as to Their Plants and Systems

New Companies.

NEW MARKET, ALA.—Articles of incorporation have been filed by the New Market Telephone Co. with $2,000 capital stock. The incorporators are: J. W. Cochran, L. F. Esslinger, H. M. Cochran and Rosa Esslinger.

PARIS, ARK.—Articles of incorporation have been filed by the Logan County Telephone Co. The incorporators are: Dr. Earl Hunt, H. Webb and James R. Gromds.

NEWARK, ARK.—Articles of incorporation have been filed by the White River Telephone Co. with $20,000 capital stock. The incorporators are: T. J. Raney, T. J. Gates and M. J. Manning.

ANDOVER, ILL.—Articles of incorporation have been filed by the Andover Mutual Telephone Co., with $2,500 capital stock. The incorporators are: H. L. Larson, G. H. Johnson and John Peterson.

GENESEO, ILL.—The Geneseo Munson Main Line Mutual Telephone Co. has been organized with a capital stock of $2,500. The incorporators are: Allan B. Cady, A. S. Offerie and A. S. McAvoy.

MANSFIELD, ILL.—A new independent telephone company is being organized to operate in Mansfield, Bellflower and Farmer City.

AVILLA, IND.—The Avilla Mutual Telephone Co. has been organized with $5,000 capital stock. The incorporators are: J. Kelham, M. Hinkley and F. Kelham.

LORIMER, IOWA.—The Monette Mutual Telephone Co. has been incorporated with $775 capital stock by T. P. McGowan, H. J. Davis, C. L. Davis, R. E. Burkheimer and Daniel Swindler.

AGENDA, KANS.—Articles of incorporation have been filed by the Agenda Telephone Co. with $2,000 capital stock. The incorporators are: M. B. Houdek, W. H. Flick, J. P. Anderson, E. P. Anderson, Walter Pentico, E. E. Dillhay, R. Thompson, J. J. Hunter and O. H. Griswold, all of Agenda.

BONNER SPRINGS, KANS.—The Edwardsville Telephone Co. had been incorporated with a capital stock of $15,000 by the following: J. D. Waters, Porter Fenton, R. M. Waters, W. F. Rehm, all of Bonner Springs and D. E. McNamara, of Wilder.

VICTORIA, KANS.—The Victoria Telephone Co. has been organized with $330 capital stock. The incorporators are: Wm. Braun, Andrew A. Brungardt, M. M. Wenzel, John I. Weigel, and John T. Brumgardt all of Victoria, Kans.

SALYERSVILLE, KY.—The Salyersville Telephone Co. has been incorporated with $500 capital stock. The incorporators are: C. Patrick, B. K. Given and D. J. Wheeler.

PORTLAND, MAINE.—Articles of incorporation have been filed by the United Telephone & Telegraph Co. with $10,000 capital stock. The officers and directors are: President, Albert F. Jones; clerk, Albert A. Richards; treasurer, James E. Manter, all of Portland, Maine.

ISHPEMING, MICH.—Articles of incorporation have been filed by the Greenwood Mutual Telephone Co. with $1,000 capital stock. The incorporators are: Thos. Gordon, R. H. Butler and J. W. Miller, all of Morley, Mich.

STANDISH, MICH.—The Bay Shore Telephone Co. has been organized with $630 capital stock to operate in Arenac township. The incorporators are: Bert Payea, Morrell C. Harding and A. W. McDonnell.

ALDRICH, MINN.—Articles of incorporation has been filed by the Aldrich & Bartlett Rural Telephone Co. with $10,000 capital stock. The incorporators are: G. Strom, of Aldrich; G. H. Carter, and W. Hamines, of Bartlett.

LANSING, MINN.—The Corning Farmers Telephone Co. has been incorporated with $4,995 capital stock. The incorporators are: S. S. Ulland, O. A. Ulland, G. Tollefson and L. O. Hanson.

BAKER, MONT.—The Big Hill Telephone Co. has been incorporated with $5,000 capital stock. The directors are: A. G. Vincelette, of Preston; A. L. Wheelden, F. F. Smith and G. E. Hough, all of Baker.

HELENA, MONT.—The Inter-Mountain Telephone & Electric Co. has been incorporated with $750 capital stock. The directors are: C. J. Fulton, J. W. Fulton, John Sanford, A. A. Fulton and J. A. Shaffer, all of Marysville, Mont.

WOLCOTT, N. Y.—The Richardson's Corners Telephone Co. has been organized with $525 capital stock. The incorporators are: Ammon Rice, Joseph Pryor, Lewis J. Wilkinson, Milton B. Wadsworth, Everett E. Castor, Arthur J. Eygnor and Fay H. Blauvelt, all of Wolcott, N. Y.

DOBY SPRINGS, OKLA.—Articles of incorporation have been filed by the Clark Creek Valley Telephone Co. with $400 capital stock. The incorporators are: J. W. Blanchard, Yelton, Okla.; J. A. Byram and A. T. Butler, of Doby Springs.

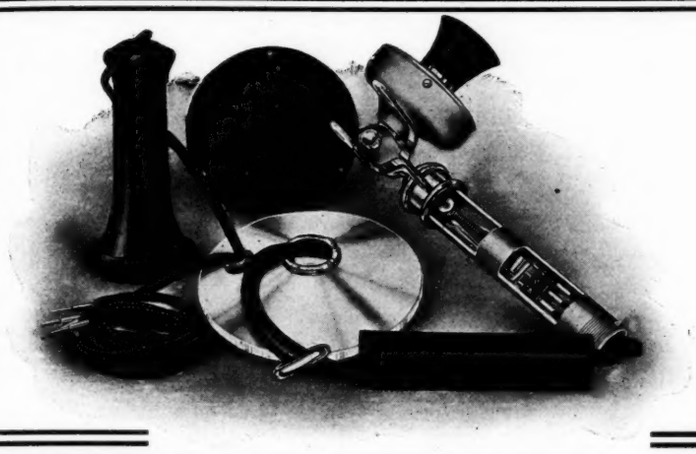
WEEDVILLE, PA.—The Weedville & Kersey Telephone Co. has been incorporated with $5,000 capital stock.

PIERRE, S. D.—The Chapelle Telephone Co. has been incorporated with $10,000 capital stock by M. H. Whitney, Wm. Borst and B. S. Payne, secretary.

SALEM, S. D.—Articles of incorporation have been filed by the Dakota Telephone Co. with $500 capital stock. The incorporators are: Joseph Bartscher, Henry Sabers and Chas. C. Wingen, all of Salem.

WATERTOWN, S. D.—The Falk Farmers' Telephone Co. has been organized with $7,500 capital stock. The incorporators are: Theo. Falk, M. P. Gergen, John Falk and L. J. Heyn, all of Watertown.

KURTEN, TEXAS.—Articles of incorporation have been filed by the Kurten Telephone Exchange Co., with $900 capital stock, The officers are as follows: Rev. J. J. Kasiske, president; Dr. W. G. Drummond, first vice-president; William Monthei, second vice-president; M. B. Easters, third vice-president; Will



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Note by the illustration how simple and accessible these portable desk sets are. All trouble points are done away with and every detail is perfect in design, material and workmanship, insuring perfect and lasting service; let us quote and send you our No. 34 Telephone Catalog.

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You Would Install Them Now

But you don't know this — you won't take the time to send a post card requesting literature that "shows how." Honestly, you don't know what you are missing—surely it's worth a postal.

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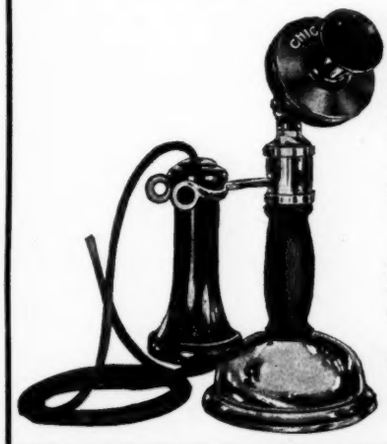
Who Was Jones?

Why Jones was a subscriber away out in the little town of C..... and he said,

"I want a phone with a name plate.

Chicago Telephone Supply Co.,
Elkhart, Indiana

on it—for I know they must be good—Smith has had his for years—and it's been more than satisfactory."



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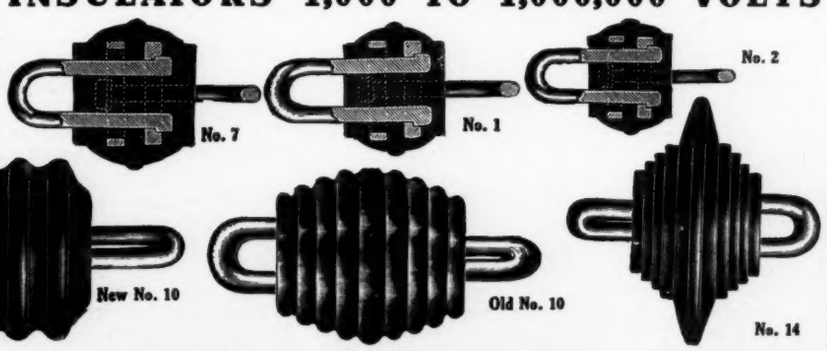

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ELECTROSE MFG. CO.
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Western Sales Agents **PARAGON SELLERS CO.,** 162 N. Fifth Ave. CHICAGO, ILL.

Payne, corresponding secretary; Dr. W. F. Odom, financial secretary, and August Prinzel, treasurer.

NIOTA, TENN.—The Niota Telephone Co. has been organized with $5,000 captial stock. The incorporators are: H. M. Wilson, Gus Eckel, J. M. Slack, J. D. Turner and W. N. Riggle.

CARSON, VA.—The Carson Telephone Co., has been incorporated with $2,500 capital stock. The officers are as follows: President, W. T. Saunders; vice-president, N. H. King; secretary, J. D. Wilkerson; treasurer, R. B. Saunders; general manager, R. B. Thweat.

OLALLA, WASH.—The Olalla Telephone Co. has been organized with $10,000 capital stock. The incorporators are: John Karcher, H. J. Karcher, H. F. Hall, F. D. Lillie and L. Finholm.

AUGUSTA, WIS.—The Augusta Light & Telephone Co. has been incorporated with $40,000 capital stock, the incorporators being L. J. Roberts, E. J. Kneen, W. H. W. Page, R. W. Bowen and J. D. Vaughan.

DOERING, WIS.—The Doering Telephone Co. has been organized by Paul Krueger, Frank Doering and Wm. Doering.

KEWAUNEE, WIS.—The West Kewaunee Western Telephone Co. has been incorporated with $1,380 capital stock by the following: Joseph Okonski, Carl Buermeister and Joseph Ratajczak.

Construction.

WILMINGTON, DELA.—The Diamond State Telephone Co. is planning many improvements, including the installation of more than five miles of underground conduit.

KEWANEE, ILL.—The Kewanee Home Telephone Co. intends to increase its capacity by adding two new positions, giving about 1,000 new lines.

METAMORA, ILL.—The Metamora Telephone Co., the Roanoke Telephone Co. and the Mt. Pleasant Telephone Co. will build a new line between Metamora and Roanoke.

ROCK ISLAND, ILL.—The Central Union Telephone Co. has purchased a site and will erect a new exchange building in this city, to cost approximately $40,000.

VICTORIA, ILL.—The Etherley & Victoria Mutual Telephone Co. expects to rebuild its line in the near future.

AVILLA, IND.—The Avilla Mutual Telephone Co. is planning to erect a new exchange building in this city.

FARMINGTON, IOWA.—Extensive improvements are being planned by the Farmington Telephone Co.

MURRAY, IOWA.—The Hawkeye Telephone Co., of Des Moines, will entirely rebuild its local exchange in this city.

ZWINGLE, IOWA.—The Otter Creek Telephone Co. has decided to rebuild its different lines.

PADUCAH, KY.—The East Tennessee Telephone Co. has appropriated $300,000 for extensive improvements in this city.

ALLEGAN, MICH.—The Citizens Telephone Co. is planning the erection of a new two-story exchange building in this city, to cost about $4,000.

BROWNS STATION, MO.—The Hinton Telephone Co. is planning to rebuild its lines to Hinton and Woodlandville.

TRENTON, MO.—The Missouri & Kansas Telephone Co. will erect a new exchange building in this city to cost approximately $40,000.

HARLOWTOWN, MONT.—The Meagher County Telephone Co. has voted to expend $2,000 in improving and extending its system.

HOLDREDGE, NEB.—The Nebraska Telephone has purchased a site and will erect a new exchange building in this city to cost about $5,000.

BUFFALO, N. Y.—The Federal Telephone & Telegraph Co. has appropriated $10,000 for rebuilding and improving its local exchange at Batavia.

LOWVILLE, N. Y.—The Black River Telephone Co. is planning many improvements to its system, among which the installation of a new modern switchboard to accommodate 500 lines is under consideration.

CLEVELAND, OHIO.—A new exchange building will be erected by the Cleveland Telephone Co. in this city to cost between $75,000 and $100,000.

BRIDGEPORT ONT.—The Welland County Independent Telephone Co. is planning to erect a new exchange building.

HUNTINGDON, PA.—The Huntingdon & Clearfield Telephone Co. will rebuild its entire system.

AUSTIN, TEXAS.—The Southwestern Telegraph & Telephone Co. is contemplating the erection of a new eight-story exchange building in this city.

SHERMAN, TEXAS.—The North Texas Telephone Co. will rebuild its Whitesboro exchange and make extensive improvements to its system.

CAMERON, W. VA.—The Grape Vine Telephone Co. is planning many improvements, including the installation of a new switchboard.

Financial.

LOS GATOS, CAL.—The Los Gatos Telephone Co. has applied for authority to increase its stock issue by $25,000 for the purpose of making extensions and improvements to its plant.

ASSUMPTION, ILL.—The Assumption Mutual Telephone Co. has increased its capital stock from $5,000 to $20,000.

WASHINGTON, ILL.—The Inland Independent Telephone System has increased its capital stock from $15,000 to $150,000.

ULYSSES, NEB.—The Ulysses Independent Telephone Co. has declared a 10 per cent. dividend.

ALBANY, N. Y.—The Public Service Commission has authorized the Orange County Telephone Co. to issue its 5 per cent. gold mortgage bonds to the amount of $50,000, the bonds to be sold at not less than 95 per cent., and the proceeds to be used for cost of construction of a new building, new switchboard, a subway and underground and aerial cables.

EAST PALESTINE, OHIO.—The Unity Township Telephone Co. has declared a dividend of 6 per cent.

READING, PA.—The Manatawny Rural Telephone Co. has declared an annual dividend of 5 per cent.

BETHPAGE, TENN.—The Bethpage Home Telephone Co. has declared an annual dividend of 10 per cent.

BRANDON, WIS.—The Alto Telephone Co., has increased its capital stock from $3,000 to $5,000.

WAUPUN, WIS.—The Alto Telephone Co. has filed an amendment to its articles of incorporation increasing the capital stock from $3,000 to $5,000. M. A. Smith is secretary.

Franchise.

ELGIN, ILL.—The Interstate Independent Telephone & Telegraph Co., of Aurora, is seeking new franchises in 20 cities and towns in this vicinity. Elgin is included in the list.

CAMERON, MO.—The Cameron Telephone Co. has been granted a new 20-year franchise by the city council.

CENTRALIA, WASH.—The Pleasant View Telephone Co. has petitioned the county commissioners for a franchise to operate a telephone line in Eastern Lewis county.

Underground.

PASADENA, CAL.—The Home Telephone Co. has been granted permission to install underground conduits on several of the principal streets of this city.

FONTANELLE, IOWA.—The Farmers Mutual Telephone Co. is planning to place some of its wires in underground conduit.

CAMDEN, N. J.—The Delaware & Atlantic Telephone & Telegraph Co. will expend $80,000 in extending the underground system of this city.

DALLAS, TEXAS.—The City Commission has granted permission to the Southwestern Telephone & Telegraph Co. to lay its wires underground on several streets.

Miscellaneous.

ARCADIA, FLA.—The Arcadia Electric Light, Ice & Telephone Co. has sold its electric light and ice plant to the Utilities Securities Corp. and the telephone exchange will be known hereafter as the Arcadia Telephone Co.

FRANKLIN, IND.—The entire Bell system in Johnson county, with the exception of toll lines to Trafalgar, Banta, Ninevah and Greenwood, has been acquired by the Franklin Telephone Co. A new automatic system will be installed and many other improvements made.

MAQUOKETA, IOWA.—T. A. Potter of Mason City, Iowa, and W. A. Eckles of Nora Springs, Iowa, have purchased the Maquoketa Home Telephone Co. Officers of the company have been elected as follows: President, T. A. Potter; secretary and treasurer, W. A. Eckles; manager and assistant treasurer, Miss Grace Kittle.

LONGWOOD, MO.—The Longwood Telephone Co. has been sold to George T. Jenkins, of Nelson, Mo., for the sum of $300.

SIOUX CITY, IOWA.—The New State Telephone Co. is planning to rebuild its Odebolt exchange and install a new switchboard.